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A National Newspaper for Every Branch of the Industry

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DETROIT

Automotive Daily News

★CARS★ SHOP EQUIPMENT TRUCKS ★★AVIATION★★ PARTS ACCESSORIES ★TIRES★

Vol. 10. No. 1219 Entered as second-class matter Aug. 27, 1925, Post Office, N. Y., N. Y., Under Act of March 3, 1879. NEW YORK, WEDNESDAY, MAY 28, 1930 10 Cents. $12 Per Year

Edward P. Warner, President of the Society of Automotive Engineers, Editor of "Aviation," and formerly Assistant Secretary in Charge of Aeronautics

AMERICAN AUSTIN

the bantam–car…that will

save you a lot of trade-in worries

Now you can sell your customer a new car without having to buy his old one.

"Buy an Austin and keep the old car too," can be your slogan. It's your answer to the man who insists he can get $100 more on the old car from some other dealer. It's your protection against tying up too much capital on the used car floor. It's the solution of the costly used car resales.

For the American Austin actually makes it as cheap for your customers to drive two cars as one. That's because the Austin does forty miles on a gallon of gas, a thousand miles on a five-pint filling of oil, twenty to forty thousand miles on a set of tires, altogether less than ¾ cents per mile for gas, oil and tires—this is economy. Your buyer can still keep his big car for family use and save money by buying an Austin for the many one and two passenger trips that form the bulk of present-day driving. Its low operating cost makes it pay for itself by saving mileage in the big car.

The bantam Austin is one of the smartest looking cars ever offered to the American public. It is adroit—easy to park—easy to drive in heavy traffic, has four wheel brakes and all the necessary equipment. Although made in America by Americans, its mechanical design is the same as that of the internationally famous car that has won over 450 cups and medals in competition with the world's finest automobiles.

The American Austin is a good business proposition for the customer and for the dealer. Over 162,000 have been contracted for since the first of the year. Write us now for information.

AMERICAN AUSTIN CAR CO., INC., 7300 WOODWARD AVENUE, DETROIT, MICH.

IT WILL RUN 20,000 TO 40,000

MILES ON A SET OF TIRES

THE AMERICAN *Austin*

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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FIRST DISCUSSION OF S. A. E. PAPERS

New Car Sales in April In Twenty-Eight States Gain 16% Over March

Total 214,118, as Compared With 292,071 a Year Ago, a Loss of 26%; Ford Registers More Than in 1929

NEW YORK, May 27.—Retail sales of new passenger cars in the first twenty-eight states and the District of Columbia reporting for April showed a good seasonal increase over March, although they continued to run substantially behind the corresponding month of 1929.

Total registrations of new cars in the states from which the Automotive Daily News has thus far received returns for April amounted to 214,118, as compared with 184,113 in the same states in March, a gain of 16 per cent., and comparing with 292,071 in April, 1929, a decline of 26 per cent.

On the basis of these returns it appears that the April decline from the corresponding month of 1929, when sales reached a high record for all time, will amount to 25 to 27 per cent., as compared with a decline in the first quarter of the year of 17 per cent. This April drop will probably result in a decline for the first four months of the year of from 20 to 22 per cent. from last year.

An outstanding feature of the April registrations was the fact that the sales of Fords continued to run ahead of last year. The total for the 28 states and the District of Columbia was 88,896, as compared with 85,246 in the same states a year ago, a gain of 4.2 per cent.

This Ford total represented 41 per cent. of the aggregate for the industry, as compared with 29 per cent. in the corresponding states last year.

Chevrolet sales in the states thus far heard from for April amount to 48,132, as compared with 56,298 in the corresponding states last year, a decline of 14 per cent. Chevrolet increased its share of the total business in these states from 19 per

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News While It's News

Technical papers presented at yesterday's session of the summer meeting of the Society of Automotive Engineers at French Lick Springs will be found on pages 4, 9, 10, 11, 13 and 15 of this issue.

Discussions following the presentation of papers are reported daily by A. Ludlow Clayden, research engineer of the Sun Oil Company.

GRAMM MOTOR SALES AHEAD OF LAST YEAR

Delphos, O., May 27.—B. A. Gramm, president of Gramm Motors, Inc., who is starting to celebrate his thirtieth anniversary since entering the motor truck industry, announces that the domestic sales of his company are 56 per cent. ahead of the same period last year. Dealer stocks are lowest in two years past.

"Cash sales have increased greatly," says Gramm, "and we are confident that no matter what business conditions are, motor trucks are needed more and more.

"Foreign trade, while off, is bound to pick up by midsummer unless held up by tariff tinkering, which is already having its serious effect on the automobile industry."

Heads Sales Chiefs

H. G. HERSH

ANNOUNCEMENT is made today by N. E. McDarby, director of sales for the Auburn Automobile Company, of the appointment of H. G. Hersh as supervisor of district sales managers for the company. Mr. Hersh, at present advertising and sales promotion manager for Auburn, will continue in that position, adding his new duties.

PHELPS, INC., NAMES NEW HEAD OF MEDIA SECTION

Detroit, Mich., May 27.—R. E. Boes, for many years well known in advertising circles here, has been appointed director of media and market research of George Harrison Phelps, Inc., it is announced by W. D. Laurie, vice-president and general manager of the Phelps organization.

R. E. Boes

Mr. Boes resigns the position of assistant director of media at Advertisers, Incorporated, with which organization he has been associated since its formation, to rejoin the Phelps aagency. Dating back to 1926, his work for both organizations has been devoted largely to market and media research for Dodge Brothers. Among the well known Detroit firms with which he was associated prior to that time are Burroughs Adding Machine Company and Campbell Ewald. Mr. Boes is a graduate of the University of Michigan.

ENGINE, TRANSMISSION AND BODY SESSIONS BRING OUT LIVELY DEBATES ON FLOOR

Large Gathering at Summer Meeting at French Lick, Ind., Shows Unusual Interest in Technical Problems

By A. LUDLOW CLAYDEN

FRENCH LICK, Ind., May 27.—Despite absolutely perfect golf weather, a good percentage of the 700 members now present at the annual summer meeting of the Society of Automotive Engineers turned up at the engine session yesterday and were rewarded by one of the best papers ever read before the society, that of Alex Taub on power plant economics.

Mr. Taub's thesis was that the ideal in any price class of automobile is to provide the maximum performance per dollar expended upon the original car and upon its maintenance throughout a normal length of life. He argued, and backed up his arguments with impressive data, that when a little more power is required on an engine the best way to get it is not always to try to squeeze a few more pounds of M. E. P. or to raise the speed, but in very many cases the best procedure from most viewpoints is to make the engine just a little bigger.

Excessive compressions lead to excessive temperatures, excessive speeds to excessive loads and the engine tends to become more costly and less reliable if the power yield per cubic inch is carried too far. As usual at summer meetings the time for discussion was very limited, but those who did speak nearly all supported the author.

The writer advanced the idea of getting the maximum possible power from a given size of engine started as a result of a ludicrous method of taxation prevalent in Europe twenty and more years ago. He said that Henry Crane and F. W. Lanchester, admitted deans of automobile engineering here and in England, had consistently upheld the advantages of relatively large bore, short stroke engines.

R. H. Janeway, who spoke in general support but particularly with respect to manifold distribution difficulties which are exaggerated in very high speed engines, said that improvements in this part of design were already far advanced.

H. E. Maynard said the present slogan of the engineers was to make each pound of material work harder and yet sell it

(Continued on Page 2)

N. Y. METROPOLITAN DISTRICT CAR SALES SHOW GOOD GAINS

New York, May 27.—Interesting facts are brought to light by a survey of the metropolitan district made by John F. Sherlock of Sherlock & Arnold, publishers of the official market analysis reports. The April total for 1930 of new car sales, covering the metropolitan district, shows 17,523, while the March total for 1930 was 14,078, an increase of 3,545 for the month of April over March, 1930, and the Greater New York totals for April, 1930, show 12,341, while the March totals for Greater New York are 9,980, a gain of 2,361.

In the first week of May new car sales for the metropolitan district were 4,737, a gain of 295 new car sales over the first week of May, 1929, and a gain over the first week of April, 1930, of 422 sales.

"In view of the hysteria about depression and the so-called falling off in sales of all kinds of merchandise," says Mr. Sherlock, "automobile sales for 1930 are most impressive, as they show that all makes of cars have continuously mounted in volume for the past four years; i. e., from the year of 1927 up to and including 1930 to date, if we except the abnormal sales for the first four months of 1929.

"The figures are as follows: First four months of 1927 total new car sales, 36,493; 1928, 45,427; 1930, 46,437.

"While the 1930 totals of all cars

(Continued on Page 3)

Steady Production Tone At Indianapolis Plants

By ARTHUR C. BUCK

INDIANAPOLIS, Ind., May 27.—A steady tone marked both the production and distribution fields of the motor industry here during past week, and, although sales continued at about the same level as other spring months, there was no pronounced movement toward higher ground.

In the manufacturing end schedules were little altered, most plants planning no changes for the beginning of June. The Ford assembly plant here employing about 1,400 men, the highest number in history, is prepared to begin with the new month on the same basis as it operated throughout May, when all departments were operated sixteen hours each daily, five days a week.

The Duesenberg plant also faced the future months with high output in prospect, while at the Stutz factory production was averaging about eight cars a day, the highest figure reached since last fall. It was said that Stutz orders on hand were also the greatest in number than at any time in several months.

The Weymann Body Company's business was reported going steadily ahead, the recovery of Stutz assisting materially in keeping up body work, most of which is taken by Stutz.

Marmon dealer ranks were said by company officials here to have attained a new high total, giving a new color to the future outlook.

Retail deliveries in practically all divisions indicated consistent buying, especially in the higher priced ranges. Some slowing up in the low-priced field was noticeable after several months during which these cars had accounted for an unusually large percentage of the sales. Some dealers reported finding a better feeling on the part of factory workers who have been hesitant in placing orders for new cars and still others placed a great deal of hope for the future in prospects for good farm crops.

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Accessories Held Subject To Government Excise Tax

WASHINGTON, May 27.—Supreme Court held that articles mainly destined for use as automobile accessories are subject to Federal excise tax, even though such articles may find a minor use other than in automobiles.

A series of cases which the court decided were brought by battery and parts manufacturers.

In a case brought by Universal Storage Battery seeking to collect refund for taxes paid, the court remanded the suit back to lower court for further finding of facts in accordance with its decision.

In the case of Vesta Battery Company, the court found that batteries sold by this company are parts for automobiles and taxable as such.

The articles manufactured by F. W. Stewart Manufacturing Company, and Gemco Manufacturing Company, which include parts for speedometers, gasoline filters, bumpers, etc., are automobile parts and so taxable.

In the suit brought by the Bassick Manufacturing Company, the court remanded the case to Court of Claims for further findings of fact.

GEO
Radiators
New Haven
AUTOMOTIVE
and
AIRCRAFT PRODUCTS
THE G & O MANUFACTURING CO.,
New Haven, Connecticut

RAILROAD AND BUS SERVICE TO LINK TAMPA AND MIAMI

Tampa, Fla., May 27.—Combination railroad and motor coach service linking Tampa and Miami, inaugurated last December for the first time by the Seaboard Air Line Railway and the Florida Motor Lines, will be offered during the summer months and throughout the year, it was announced here by Charles R. Capps, first vice-president of the Seaboard Air Line Railway, and George G. Morse, executive manager of the Florida Motor Lines and affiliated companies.

Lively Discussion Greets Papers at S. A. E. Meeting

(Continued from Page 1)

cheaper, in which the alloy material experts had greatly assisted. Mr. Taub also presented another paper in conjunction with Mr. Janeway, this being a review of the work of several investigators of combustion chamber design in relation to detonation and smoothness of running. This was a very able summary of the progress of different men and a comparison of wherein they agreed and differed. It is a notable contribution to the literature of a very involved subject.

In the body session the papers given were of rather highly mathematical order. The one likely to show most immediate effect in practical terms was by Dr. Pawlowski of Michigan on "Wind Resistance." He described the resistance characteristics of different body types and said that a careful study of body contour might easily raise the maximum speeds possible without going to what would now appear as freak body designers. Such things as an inclosure of semi-streamline form for the trunk and spare tire and some attention to fender and running board shapes might, he said, make as much difference as quite a little change in engine power. He reviewed several simple methods of testing models and full size cars.

The subject of transmissions is obviously well to the front in the minds of all the engineers today. In the discussion of Alex Taub's paper the effect of four-speed transmissions in reducing the maximum engine speeds which are now causing us trouble was brought up.

In the evening session, devoted entirely to forms of gear reduction, Herbert Chase and F. C. Pearson pretty well reviewed the whole field from the viewpoint of the present state of the art of designing quiet transmissions or new types with more than three speeds. As was to be expected, the discussion was hot and heavy. J. A. C. Warner more or less summed up the situation by the remark that he hoped the sales departments would keep the engineers on the job till something was settled.

Thomas Litle read some written discussions, one of which described the action of the Spontain Infinitely Variable Gear, which has been used on taxicabs in Stockholm, Sweden, and the frequent references to this in the later discussion showed that the members present had a great interest in mechanisms of this sort, though none actually said so.

F. R. Strickland was the main sponsor for three-speed gear, with easy shift, and getting the smooth high speed by engine design. He said the public just would not shift gears any more than they had to, and that to take advantage of a four-speed it was necessary to drop to third for acceleration just at times when the average man least desired to go to that trouble.

One speaker answered this in part by saying that the increasing number of traffic lights were forcing many more stops and that drivers were learning to handle shifts whether they wanted to or not. Strickland also pointed out that less reduction in the rear axle and more on the transmission gears meant higher stresses all through, from axle to clutch, in which C. W. Spicer supported him by saying that smaller axle ratios meant larger universal joints and propeller shafts.

Ex-President Alden said that he could see no need for adding a fourth speed to the gear set, but he thought what the public wanted was two-driving ranges. He would suggest the investigation of the addition of a supplementary gear on the transmission, giving about a one and one-half to one drop, something that could be operated by a supplementary control giving one three-speed combination for city driving and another for open road. He said he did not think the axle was the proper place for such a two-speed combination.

Carl Nearacher of Chrysler, in answer to some comments in Herbert Chase's paper, said that the more expensive design might be the least costly to manufacture. More simple parts were better than few complicated pieces.

Altogether the discussion was a very mixed affair. It was strongly reminiscent of the days when the pros and cons of six and eight cylinders were the topic. Obviously considerations of sales policy and patent departments handicapped the discussion a good deal, and equally obviously the only thing on which there was any general agreement was that the public has not to decide, and it is a matter of what it wants rather than a truly technical one.

At the brake session this morning A. W. Frehse, engineer with the Chevrolet Motor Company, presented an interesting paper.

Mr. Frehse pointed out that modern brake development is now reaching a stage in which the performance of a brake design can be predetermined accurately with almost the same certainty as that for power plants. Accurate mathematical expressions and formulas now supplant the old cut-and-dry method used on many types of brake. Armed with these mathematical tools, a designer can proceed with his designs without the usual misgivings and uncertainties that characterized former brake design. In practically every case the original layout using the principles outlined has withstood the rigors of break-down testing and field service, with very few modifications of a minor nature.

Thermal and dynamic effects are disclosed, and their influences on the parts constituting the brake are discussed. These effects may spell success or failure in what looks to be a good design. The fallacies of the simple shoe-brake are discussed, and a method for overcoming them is offered.

Other papers presented today were by A. J. Scaife of the White Motor Company, whose topic was "Analyzing Speed and Ability Factors of Motor Coaches and Motor Trucks," and C. L. Cummins, of the Cummins Engine Company, who discussed Diesel engines for automobiles.

H. D. Hill of the Hill Diesel Engine Company discussed small Diesel engines and John Whyte of the Warner Electric Brake Corporation talked on electric brakes for cars and trucks. L. R. Buckendale of the Timken-Detroit Axle Company talked on balloon tire equipment for trucks and coaches.

APRIL CAR SALES 16% ABOVE MARCH

(Continued from Page 1)

cent. a year ago to 22 per cent. this year.

Ford and Chevrolet combined accounted for 63 per cent. of the sales in these states in April, 1930, as compared with 48 per cent. in the same states a year ago.

Following are the registrations of the ten leading sellers in the twenty-eight states and the District of Columbia in April, 1930, as compared with April, 1929:—

	1930	1929
Ford	88,896	85,246
Chevrolet	48,122	56,298
Buick	6,975	9,604
Pontiac	6,939	14,961
Essex	5,876	19,962
Dodge	5,456	8,417
Chrysler	5,064	6,063
Oldsmobile	4,753	8,489
Studebaker	3,932	6,542
Plymouth	3,902	6,130

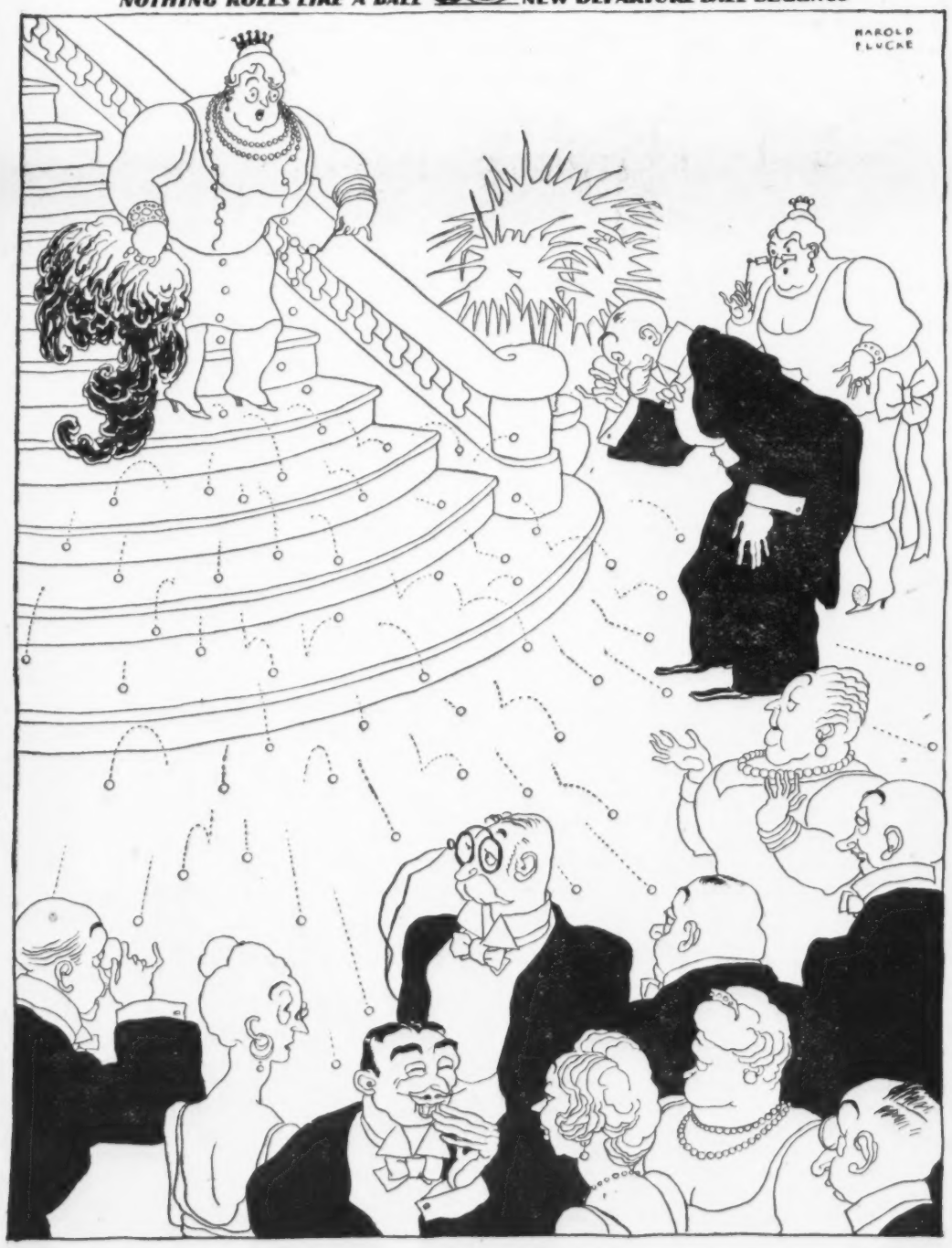
Following are the registrations in the twenty-eight states and the District of Columbia for April, 1930, as compared with April, 1929, and March, 1930:—

	April 1930	April 1929	March 1930
Alabama	2,878	4,615	2,364
Arkansas	2,310	2,927	1,992
California	18,939	25,223	19,898
Connect'ut	6,249	8,681	4,455
Delaware	987	971	869
Florida	2.915	3,564	2,985
Idaho	1,487	1.546	1,174
Illinois	22,415	29,765	20,859
Maryland	5,076	5,069	4,377
Michigan	20,954	33,081	17,719
Minnesota	14,501	12,546	7,226
Missouri	10,784	15,909	17,517
Montana	1,302	3,344	1,479
Nevada	282	399	331
N.Hampshire	1,971	2,055	979
New Jersey	11,784	15,725	11,061
N. Carolina	3,370	6,649	3,086
N. Dakota	2,446	4,917	1,186
Ohio	24,780	37,350	15,912
Oregon	3,502	3,179	2,123
Pennsylv'nia	26,398	36,150	21,808
R. Island	2,175	3,011	2,162
S. Carolina	1,677	3,113	1,398
S. Dakota	2,050	2,916	1,878
Utah	1,626	1,815	1,210
Washington	5,159	5,814	5,289
W. Virginia	4,210	5,483	2,602
Wisconsin	9,571	13,780	8,903
Dist. of Col.	2,319	2,468	2,071
Totals	214,118	292,071	184,113

796,038 MOTOR VEHICLES OWNED IN MASSACHUSETTS

Boston, Mass., May 27.—There are approximately 5 per cent. more automobiles owned and operated in Massachusetts this year than there were last year at this time, according to latest compilation of figures by the registrar of motor vehicles. Passenger car total this year to date has reached 700,638 and commercial cars 95,408, making a grand total of 796,038 vehicles, compared with 756,237 for the same period last year. Total for the first four months is only 220,878 less than the total for the whole of last year.

NOTHING ROLLS LIKE A BALL — NEW DEPARTURE BALL BEARINGS



MRS. VANDERFELLER SCATTERS THE NEWS THAT "NOTHING ROLLS LIKE A BALL"

An upholstery Fabric with a name carries with it a certain standard of quality which makes it easier to sell cars

CHASE
Velmo
UPHOLSTERY FABRICS

Pennsylvania April Car Sales Top March by 17%

TOTAL FOR FOUR MONTHS OFF 18%

Ford Registrations Up For Both April and Four Months

NEW YORK, May 27.—Sales of new passenger cars in Pennsylvania in April showed a substantial seasonal increase over March, according to the returns received by Automotive Daily News. The total registrations amounted to 26,398 for the month, as against 21,808 in the preceding month, an increase of 17 per cent.

Sales continued to run under a year ago, however, the April total comparing with 36,150 in April, 1929, a decline of 9,752, or 27 per cent.

For the first four months of the year the total registrations reached 70,562, as against the 86,543 for the corresponding period of 1929, a decline of 15,981 units, or 18.4 per cent.

Ford sales in April showed an increase over the corresponding month of last year, amounting to 9,905, as against 8,768, and for the first four months totaled 26,451, as against 23,497 in the similar 1929 period.

Chevrolet registrations in April were 5,135, as against 6,379 a year ago, and for the four months were 14,521, as compared with 15,691 in 1929.

Buick took third place in April sales and for the first four months. April registrations of this car were 1,099, as compared with 1,303 a year ago, while for the four months they were 2,766, as against 3,268 in the 1929 period.

Marmon sales showed a slight gain in the four months over a year ago, while Pierce-Arrow and Windsor sales were also up.

Following are the new car registrations in Pennsylvania in April, 1930, as compared with April, 1929, and March, 1930:

	Apr. 1930.	Apr. 1929	Mar. 1930
Ford	9,905	8,768	8,163
Chevorlet	5,135	6,379	4,656
Buick	1,099	1,303	902
Chrysler	888	1,067	608
Pontiac	885	1,628	585
Dodge	811	1,201	651
Essex	766	2,866	786
Oldsmobile	640	1,184	573
Plymouth	596	861	377
Nash	546	1,326	478
Studebaker	546	771	436
Willys	474	*	340
DeSoto	466	655	416
Graham	421	659	230
Hudson	403	784	394
Hupmobile	374	550	257
Packard	339	693	215
Oakland	296	388	271
Durant	255	473	205
Marquette	163	**	96
Auburn	161	209	124
Willys-Knight	154	547	124
Marmon	151	303	136
Whippet	148	2,042	115
La Salle	129	223	87
Reo	122	185	108
Franklin	110	144	133
Pierce-Arrow	105	128	78
Cadillac	96	131	52
Peerless	72	169	50
Lincoln	40	56	24
Viking	27	2	25
Windsor	18	20	60
Cord	16	†	12
Jordan	16	53	15
Gardner	10	24	18
Stutz	1	27	1
Miscellaneous	14	259	7
Totals	26,398	36,150	21,808

*Then the Whippet Six. †Not on the market.

Following are the new car registrations in Pennsylvania for the first four months of 1930, as compared with the corresponding period of last year:

	1930	1929
Ford	26,451	23,497
Chevrolet	14,521	15,691
Buick	2,766	3,268
Essex	2,505	6,489
Pontiac	2,140	3,367
Chrysler	2,051	2,431
Dodge	2,032	2,852
Oldsmobile	1,845	2,592
Nash	1,466	2,888
Studebaker	1,374	1,919
Plymouth	1,362	1,779
De Soto	1,265	1,445
Hudson	1,165	1,823
Willys	991	*
Hupp	944	1,079
Graham	924	1,520
Oakland	909	978
Packard	866	1,504
Durant	744	1,017
Whippet	471	4,639
Marmon	431	428
Willys - Knight	412	1,145
Auburn	406	516
Marquette	365	†
Franklin	346	394
La Salle	337	560
Reo	327	509
Pierce - Aroow	263	230
Cadillac	210	310
Peerless	194	394
Windsor	102	46
Lincoln	100	116
Viking	62	2
Jordan	52	154
Cord	44	†
Gardner	40	117
Stutz	14	53
Miscellaneous	44	673
Total	70,562	86,543

*Then the Whippet Six. †Not on the market.

WHITE TO BE MANAGER OF BROCKWAY BRONX BRANCH

New York, May 27.—The Brockway Motor Truck Corporation announces the appointment of V. White as manager of the branch at 1172 Randall Ave., The Bronx, New York. Mr. White has been connected with the automotive industry for a number of years, with the White Motor Company, the La France-Republic Company and the Autocar Company.

N. Y. METROPOLITAN DISTRICT CAR SALES SHOW GOOD GAINS

(Continued from Page 1)

for the first four months in the metropolitan district show a decrease of about 17 per cent. under 1929 for the same period, this is not surprising when we consider 1929 as the biggest year in car sales the industry ever had.

"A surprising gain of new car sales for the metropolitan district of 5,384 is shown by several makes of cars in the high, medium and low priced field for the first four months of 1930 over the banner four months of the year 1929.

"Of all cars registered in the metropolitan district a certain percentage was gained in the $1,000 class and under. Naturally these sales show one of marked growth in Ford production compared with previous years. The market as a whole showed a larger number of individual cars delivered in 1930 than in 1929.

"Regarding comparative sales in the two important groups making up the automobile market, i. e., cars selling for more than $1,000 and other cars selling for $1,000 and under; it is encouraging to note upon examination of the car sales in both these groups that the market is gaining strength as the season advances. Of course, we refer to the New York metropolitan area, which is considered, the most discriminating and most concentrated passenger car market in the world."

NEW DE SOTO DISTRIBUTOR NAMED IN CLEVELAND, O.

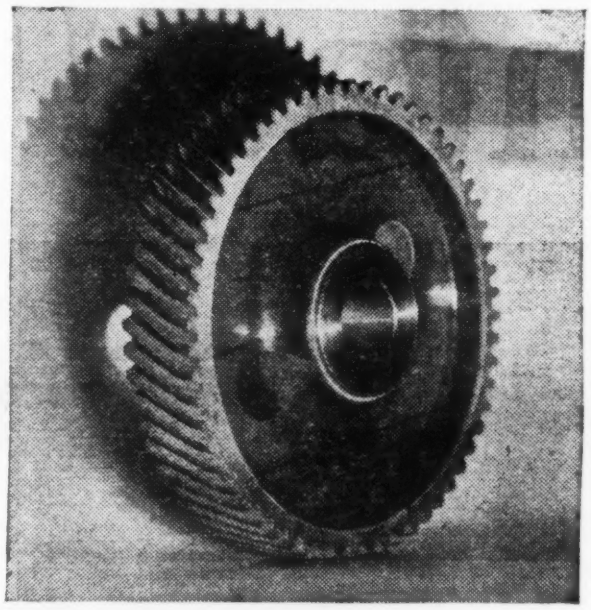
Detroit, Mich., May 27. — Announcement is made by L. G. Peed, general sales manager of the De Soto Motor Corporation, of the formation of a new firm to distribute De Soto sixes and straight eights in Cleveland, O.—the L. P. Jones Company. This concern was formerly the Bradlow-Laraway Company. It will handle Plymouth cars in addition to De Soto under the new sales plans for Plymouth. The new location will be at Euclid Avenue and 66th Street. L. P. Jones is vice-president and general manager of the new concern. Theodore Bradlow and A. C. Dickard, both associates of Jones for more than a decade, are secretary - wholesale manager and manager-treasurer, respectively.

GENERAL MOTORS FORMS NEW HOLDING COMPANY

New York, May 27.—Change in name of the Fokker Aircraft Corporation, 40 per cent. of which is owned by General Motors Corporation, to the General Aviation Corporation and an increase in the capital stock from 1,000,000 to 5,000,000 shares of no par value has been approved by the directors and will be voted upon by the stockholders at a meeting in the near future.

The general Aviation Corporation will be a holding company and will take over both Fokker and the Dornier Company of America, another General Motors unit. It is believed that the reorganization will give General Motors more than a majority of the outstanding stock of the new corporation.

The announcement was made by Harris M Hanshue, president of Fokker.



A Token of Good Manufacture Throughout the Car

TEXTOLITE TIMING GEARS

Simplicity is the crowning engineering achievement. When a job is done in the simplest way it is done in the best way.

When it comes to timing drive, what is simpler than gears? They offer the first requisite of good timing—

CONSTANT SYNCHRONIZATION

And when Textolite gears are used they provide, as well, the second requirement—

LONG, SILENT LIFE

Both these attributes result in satisfaction to the owner.

* * * * *

There is no compromise with accuracy in a good gear drive. It is a token of good manufacture throughout the car.

830-92

JOIN US IN THE GENERAL ELECTRIC HOUR, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Electrically Operated Vehicle Brakes Discussed

The following paper on "Electrically Operated Vehicle Brakes" was presented yesterday at the meeting of the S. A. E. at French Lick, Ind., by John Whyte, chief engineer of the Warner Electric Brake Company, Beloit, Wis.

A definite amount of kinetic energy is available in every moving vehicle. This kinetic energy must be absorbed to stop the vehicle. The electromagnetic brake simply utilizes the kinetic energy of the vehicle to stop itself.

Before considering the brake in its commercial form, an indication of what is possible with small wattage consumption in the way of electromagnetic clutches may be interesting. For example, an electromagnet, as shown in Fig. 2, connected to a six-volt storage battery and using 3 amp. has a direct lifting ability of 2,500 pounds. When utilizing a friction face having a coefficient of friction of .4, this will render available at the magnetic center line a torque of 1,000 pounds.

There is practically no limit to the power that can be built into one of these small electromagnets, and

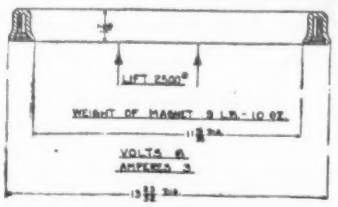


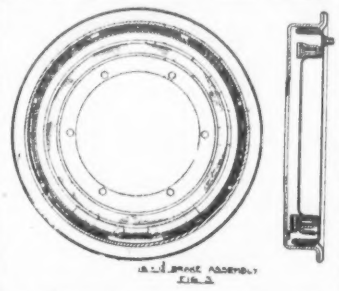
FIG. 2

the current consumption need never be excessive.

Consider this force applied to a brake band designed to utilize the maximum safe amount of self-energizing and you have a brake torque output of 40,000 lb.-in. Basically, this is what the electric brake does.

The electric brake shown in Figs. 3, 4 and 5 consists primarily of an electromagnetic energizing unit and a simple brake-shoe amplifying unit. The electromagnetic unit comprises a magnet and an armature. The magnet is a ring-type unit, made from magnetic iron, having a U section. Within this U section is contained a coil of copper wire properly proportioned for the work required and imbedded in bakelite cement. This magnet is faced with a special friction facing which is also attached to the magnet proper by bakelite cement. The entire assembly is baked under conditions to obtain a rugged and solid unit that is waterproof.

The armature unit of the magnet combination is substantially a flat ring of magnetic iron, which is fabricated to contend with the conditions of operation. This armature unit, shown in Fig. 5, is attached to a standard type of brake-drum and revolves with the drum, making very light contact at all times with the friction face of the magnet. The method of mounting the armature is by the use of alloy steel springs, which are treated for maximum physical properties. These springs



are three in number and evenly spaced around the armature. They are arranged to have a possible longitudinal movement of $\frac{3}{8}$ inch so that they will accommodate the position of the armature to that of the brake assembly on the axle and also accommodate the armature position for lack of proper alignment of the wheel and drum. Thus, if a drum or wheel happened to run considerably out of true, the armature would at all times be in its proper position to function.

The magnet unit has projecting from its periphery two lugs, made from alloy steel, heat-treated and hardened. These lugs are interconnected with the brake band, which carries the brake liner. This brake band is a steel ring of substantial proportions, having at its ends stamped pieces which interconnect with the magnet and also form the abutment against the anchorage of the brake backing plate which takes the brake load. Riveted to this band are a number of brake liners of molded construction and arranged to cover almost the entire periphery of the drum. This form of brake band gives a very uniform build-up of pressure, due to the self-energizing action of the band, and accommodates, to a certain degree, eccentricity of the brake drum.

The action of the brake is extremely simple. When energized by current from the battery, the magnet exerts a gripping action on the armature and tries to rotate with it. This rotation is possible because the magnet is mounted on a bearing that is concentric with the brake

(Continued on Page 11)

Contact!

•

We are maintaining contact between S. A. E. members at French Lick and the outside world.

•

Prest-O-Lite Storage Battery Company is delivering Automotive Daily News by this plane---landing daily at the fifteenth hole of the Lower Golf Course.

•

REAL PREST-O-LITE SERVICE

47%

of the Studebaker dealers in the United States have been Studebaker dealers for five years . . . or more. Numbered among them are many who first displayed the Studebaker emblem over 20 years ago.

Studebaker dealers "stick" to Studebaker because the product is sound, salable and the treatment they receive from the factory is profitable and fair. The unique cooperation Studebaker extends to its dealers led one prominent trade paper editor to refer to Studebaker as ---

AMERICA'S FRIENDLIEST FACTORY

THE STUDEBAKER CORPORATION OF AMERICA
South Bend, Indiana

What Car Dealers Are Doing and Saying

Brockway Dealer Finds First Class Service Pays

By FRANCIS P. DAILY

THOROUGH and business-like service for the customer goes farther in building up a worthwhile and permanent business than high-pressure sales methods, according to Jerome Fanciulli, Washington, D. C., dealer in Brockway trucks. Mr. Fanciulli is also secretary and founder of the Commercial Vehicle Owners' Association, which has as its objective the securing of favorable regulations and legislation governing truck and bus operation and the prevention of oppressive government regulation of such traffic.

"We aim to build a permanent business through the rendering of first-class service," said Mr. Fanciulli, "rather than to make sales totals, attained through high-pressure and often unwise salesmanship, our chief objective.

"To begin with," he said, "we are not out coaxing any one to buy a truck unless we are sure they need it. Our first step is to ascertain just what service is needed from the truck. We make a survey of the customer's needs intended to show working conditions, purposes for which the truck is needed and the loads it will be required to carry. Having studied our prospect's needs, we next submit a proposition that we believe will perfectly fit his needs. We offer him a truck that in speed, carrying power and adequate tires to carry the special load will give him the best obtainable service.

"Another important point in our business is that we do not necessarily sell to every customer who wants to buy from us. If our investigation shows that the customer has a legitimate need for a truck and that he is doing the right sort of business and not engaged in price-slashing, we are glad to sell to him. We thus insure that credit losses or troubles shall be held to a minimum; also there is a certain satisfaction in feeling that the organization is doing the right sort of business. Not only is there a good chance that the price-cutter will sooner or later be unable to meet his obligations, but his business tactics also tend to undermine solid business.

"He cannot earn a legitimate profit on his own invested capital, and his business methods tend to hurt and oppress other business men in the same line. We depend upon the trade as a whole and it does not seem ethical to encourage those who show no consideration for the well being of business."

Mr. Fanciulli believes in direct contacts with customers rather than advertising.

"We are very fully acquainted with the truck demand in this territory," he said, "and we find it better to concentrate efforts through individual salesmen rather than to scatter our fire in advertising. We try to find out just what the situation is in every case and to have our salesmen co-operate with the customer in helping him to solve his needs. Service rather than salesmanship is our motto."

The Fanciulli organization does not expect their service department to be self-sustaining, claiming that lengthy experience has taught them that it must be regarded as simply part of the sales expense.

"It is impossible to make any profit on parts sales," said Mr. Fanciulli, "since the distributors of parts make it a practice to allow the same discounts to individuals as they do to us. This one phase of service is very important and indicates there is no money or even self-maintenance to be expected from a truck sales service department. We just figure the service department as part of the sales overheads and concentrate upon our new business."

The Fanciulli organization is one of the very largest in the capital, handling a great deal of government business as well as that of private concerns.

GIVES 1,500 MILES OF GAS WITH USED CARS

By JULANIE LAMPKIN

WILSON MOTOR COMPANY, Crawfordville, Ga., has recently closed a successful merchandising plan which was held one month only in order to increase its used-car business. The concern, selling Willys-Knight and Whippet automobiles, gave each person who purchased a car enough gasoline to drive it 1,500 miles. This was regardless of the price of the car.

The company also offered three inspections of 500 miles each in connection with the purchase of each automobile. During the time this offer was open the Wilson Motor Company disposed of fifty-five used cars.

BOSTON DODGE FORCE GUESTS AT PROVIDENCE

AS THE final event in a six weeks sales contest, the Boston Dodge Brothers organization, including salesmen of the Massachusetts Motor Car Company and associate dealers in Greater Boston, visited the Dodge Brothers organization in Providence a recent week end. Dinner was served at Smith's Inn and prizes amounting to several thousand dollars and silver trophies were given by former Governor Alvan T. Fuller to the highest point winners. During the six weeks that the contest was in operation, the Boston organization delivered 1,011 Dodge cars. It is planned to make this contest an annual event, and the recent contest has inspired such enthusiasm that increased sales in this territory are expected for some time to come.

ERIE AUTOMOTIVE ASS'N REPORTS GOOD MAY SALES

Erie, Pa., May 27.—Sales of both new and used cars in northwestern Pennsylvania have shown a remarkable improvement this month, according to a survey of the situation by the Erie Automotive Association, composed of dealers and distributors in this city and county.

"Dealers are delivering many new vehicles, both passenger and commercial in nature," says the report, "and all indications point to a summer business volume of satisfactory proportions."

NINE FORD SALESMEN OWN MODEL A CARS

NINE employees of the Bennet Auto Sales Company, Ford dealer in Bayonne, N. J., are owners of the new model "A" Ford. Perhaps their belief and enthusiasm in the product they service and sell had much to do with Bayonne records in April, when it delivered 95 new Fords. The goal is 125 in May.

DEALER DOINGS

Newark, N. J., May 27.—W. G. Toland, president of Nash-Newark, Inc., announces that F. M. Scheiner has taken over the Central Avenue branch under a special contract. It will be known as Scheiner-Nash. For eleven years Mr. Scheiner was associated with the Studebaker Corporation. Cars sold by Scheiner-Nash will be serviced by Nash-Newark, Inc. The showroom, at 380 Central Ave., is finished in Spanish style and has room for the display of eight new cars, while the rear of the building will be devoted to the sale of used cars.

Laurens, Ia., May 27. — Clyde Charlton, Des Moines, and Walter Holt, Gilmore City, have acquired the Laurens Motor Company, Ford sales and service company, from Hunter Bros. of Earlham. Roy A. Hutzell will continue as manager. The new owners also operate a garage in Gilmore City.

Richmond, Va., May 27 (UTPS). —The Sprinkle Motor Corporation of Marion, Va., with maximum capital of $25,000, has been granted a charter by the State Corporation Commission to buy, sell and deal in automobiles. E. B. Sprinkle of Marion is president. B. F. Buchanan of Marion is attorney for the corporation.

Houston, Tex., May 27.—The Eason Motor Company has been organized here to distribute the new Austin cars, and has secured a location at 3603 Main Boulevard for a period of five years. The firm will occupy its quarters about June 1.

N. J. DURANT DEALERS GREET ZAC DUNLAP

NEWARK, N. J., May 27.—Zac Dunlap, sales promotion manager for Durant Motors, Inc., spoke to the New Jersey dealer organization at a reception and dinner tendered by Durant dealers operating through the U. S. Motor Sales Company of 493 Broad St., state Durant distributor, at the Eagle Rock Inn, West Orange, N. J., tonight.

Max Stadfeld, president of the U. S. Motors Sales Company, acted as host and introduced J. H. Clarke, New York district manager, who acted as toastmaster.

Mr. Dunlap pointed out that this is an age of severe competition and sales resistance.

He suggested that sales contests among the members of the sales force should be inaugurated and made with a really worth-while incentive as a goal.

"If you intend to stay in business as automobile dealers," Mr. Dunlap said, "you must sell more cars—get your share of the business in our price class. It is there for you to get, so go to it. The factory wants you to make money, knows you must make money. The factory is a friendly factory—it is working with you and for you at all times."

FRANCIS OF GRAHAM-PAIGE RETURNS FROM U. S. TOUR

Omaha, Neb., May 27.—That business has settled down to a normal basis is the impression gained by W. A. Francis, general manager of branches for the Graham-Paige Motors Corporation of Detroit, who visited Omaha recently on the last lap of a nationwide journey which took him to the majority of large centers in the United States.

BLUE SUNOCO MOTOR FUEL

KEEPING pace with gasoline engine development has not been easy for oil refiners.

Anyone could make good gasoline ten years ago. Today good motor fuel cannot be made without modern plants nor without skilled supervision.

All equipment used for making Blue Sunoco is unique in design and operation. Each individual factor essential to good fuel is under control. Anti knock–volatility–proportions of carbon to hydrogen–gum forming impurities, etc.

Since first introduced Blue Sunoco has been constantly made better than its original high standard.

It combines all modern motor fuel requirements for performance and has none of the drawbacks of improperly refined high compression gasolines. It sells—everywhere—at regular gas price.

A. LUDLOW CLAYDEN
Chief Research Engineer

SUN OIL COMPANY

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday and Monday by
AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
350 Hudson St., New York, N. Y.
O. J. Elder, President. H. A. Tarantous, Vice-President. Alexander Johnston, Secretary.

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Member A. B. C.

WEDNESDAY, MAY 28, 1930

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George M. Slocum, Manager Detroit Bureau, 427-8 Fisher Building, Detroit, Mich., phone Empire 3500; Willard R. Cotton, Western Manager, 333 North Michigan Ave., Chicago, Ill., phone Central 5936; Metz B. Hayes, New England Manager, Little Building, Boston, Mass.; Blanchard, Nichols & Coleman, American National Bank Building, San Francisco, Cal.; Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash. Address ALL advertising and business correspondence to 2716 Graybar Building, New York City.

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Mail subscriptions to CIRCULATION DEPARTMENT—C. H. Wilson, Manager.
1926 Broadway, New York, N. Y. Telephone TRA falgar 4500
Subscription Rates—One year, $12.00; two years, $20.00, for United States and Canada. To Foreign Countries—One year, $15.00; two years, $26.00. Single copies, 10 cents.

A Traveling Industry

WE talked recently with a prominent executive in the accessory manufacturing field who has just returned from a trip that took him into almost every city of first, second and third class rating in the country. We asked him what outstanding fact has stuck in his mind as a result of his months of comprehensive travel.

His reply surprised us, because the fact that most impressed him was the number of highly placed sales executives that he met in the field during his journeyings. He mentioned name after name of the leading sales executives in the passenger car field and told where he had met each one. One of them he met in San Antonio, Tex., on Sunday morning. This particular sales manager had just arrived in the beautiful Texas city, he had a meeting booked for noon with his local distributor and staff and he was leaving by the Sunday night train for another place where the same program would be carried out. This particular sales executive had spent a month on sleepers, never breaking the monotony, even by a night in a hotel.

The fact is that present conditions in the automotive sales field have induced a more thorough going over of the territories by sales executives than has ever before been undertaken. This personal touch is going to be a very important factor in developments during the rest of 1930 and beyond. The fact that our industry's sales executives have taken to the road augurs well for the future.

The Jobber Picture

COMMERCIAL and industrial changes usually come so slowly that we scarcely realize their arrival. We have to look back across the years to recognize that this or that aspect of a business has completely changed. Not often does there come such a cyclonic upheaval as radio wrought in the phonograph business, for instance, when a great industry was wiped out temporarily, almost over night. It is well that commercial changes do come as evolution rather than revolution, because the progression gives the individual a chance to readjust himself to the new order.

Looking back across the years, most of us can remember when the automotive jobber filled his shelves with accessories, destined for the more complete equipment of motor vehicles. Gradually the vehicle manufacturers added more and more items to the original equipment of their cars, until today the accessory side of the jobber's business is largely in replacements.

This change brought the replacement market into a position of first importance and inevitably broadened its scope. The jobber began stocking more and more replacement parts as against the class of goods that we know as accessories.

And now a further change is noted in the jobber situation, with the rise in importance of service. More and more the jobber is being called upon for service. The jobber picture today contains elements of the equipment business (distinct from factory equipment), the replacement business and the growing factor of service.

It has been a great change, but fortunately it came slowly enough to give the individual jobber time to readjust himself and his business to meet the new conditions.

Now is the time to lift the 1930 sales year out of the ruck. A late spring discouraged buyers, but our sudden plunge into summer has stirred the new car urge in every breast. Salesmen will find a different reception awaiting them now than when they called in the freezing days of last week.

Ask Us to Tell You

In presenting this service department, The Automobile Daily News is actuated by the desire to help its readers solve their problems.

In some instances readers may desire information which will require an expenditure of money to secure, and in such cases we shall be glad to get the desired data at the least possible cost, or we shall inform our readers where they may obtain it most economically and expeditiously.

QUESTION: Please send us the figures of the total percentages of sales the Ford Motor Company made during the year 1929, also the total percentage of sales made by the Ford Motor Company during the past two years.—A. K. D., Birmingham, Ala.

ANSWER: Registrations of the Ford car in the United States in 1929 amounted to 1,310,119, equal to 33.7 per cent. of the total for all cars of 3,881,408. In 1928 Ford sales amounted to 481,340, or 15.3 per cent. of the total of 3,134,272 for all cars.

For the past two years Ford has registered 1,791,450 cars, equal to 25.5 per cent. of the total for all cars for the period.

Sales of Ford commercial cars in 1929 amounted to 223,353, equal to 42.4 per cent. of the total of 526,768, while in 1928 Ford truck sales were 65,260, or 19.1 per cent. of the total of 341,302. For the two years Ford sales totaled 288,613, or 33.2 per cent. of the total of 868,070.

Editor, Automotive Daily News: Your editorial of May 22 relative to "Using Automotive Transportation in preference to any other form of carriage" has been our slogan for the past year. We have found same cheaper, quicker and more convenient.

An example follows: We have heavy shipments from Rockford, Ill., to our Toledo plant each week. By railroad it requires one week to complete shipment. By truck, two days. By railroad we must cart these heavy boxes from railroad yards to our plant at a cost of $4 a load. By truck it is brought direct to us at no extra expense. It should not be very difficult for any hard-headed automotive business man to see the "light" of your suggestions.

F. L. SIEBERT, JR.
The Shop of Siebert, Toledo, O.

COMING EVENTS

MAY

27-29—**Washington, D. C.** National Conference on Street and Highway Safety.
25-29—**French Lick Springs, Ind.** Society of Automotive Engineers' summer meeting.
30—**Indianapolis, Ind.** Automobile Race.

JUNE

5—**New York.** National Automobile Chamber of Commerce annual meeting.
9-12—**Detroit, Mich.** American Society of Mechanical Engineers' semi-annual meeting.
23-26—**San Francisco, Cal.** Meeting American Electric Railway Association.
23-27—**Atlantic City, N. J.** American Society for Testing Materials annual meeting at Chalfonte-Haddon Hall.
26-28—**White Sulphur Springs, W. Va.** Steel Founders Society summer convention.
29-July 13—**Posen, Poland.** International Motor and Transport Show.

AUGUST

26-28—**Chicago, Ill.** Society of Automotive Engineers aeronautic meeting in conjunction with National Air Races.

SEPTEMBER

22-26—**Chicago, Ill.** American Society for Steel Treating meeting at Stevens Hotel.
29-Oct. 4—**Pittsburgh, Pa.** National Safety Council Annual Safety Congress.

OCTOBER

2-12—**Paris, France.** Automobile Salon.
6-11—**Washington, D. C.** Sixth International Road Congress.
6-11—**Washington, D. C.** American Road-builders' Association Convention.
8- 9—**Detroit, Mich.** Society of Automotive Engineers production meeting at Book-Cadillac Hotel.
22-24—**Pittsburgh, Pa.** Society of Automotive Engineers' transportation meeting.
16-25—**London, England.** Olympia Motor Show.

NOVEMBER

6-16—**Berlin, Germany.** International Automobile Show.
8-15—**Chicago, Ill.** Automobile Salon at Drake Hotel.
10-14—**Cleveland, O.** Motor and Equipment Association Show.
17-22—**Cleveland, O.** National Standard Parts Association Show.
30-Dec. 6—**New York.** Automobile Salon at Hotel Commodore.

DECEMBER

6-17—**Brussels, Belgium.** Automobile Exhibition.

JANUARY

3-10—**New York.** National Automobile Show.
24-31—**Chicago, Ill.** National Automobile Show.

S. A. E. Program

Activities at the Summer Meeting at French Lick Springs Hotel, French Lick Springs, Ind., May 25-29

WEDNESDAY, MAY 28

10.00 A. M.—Aircraft and Aircraft Engines

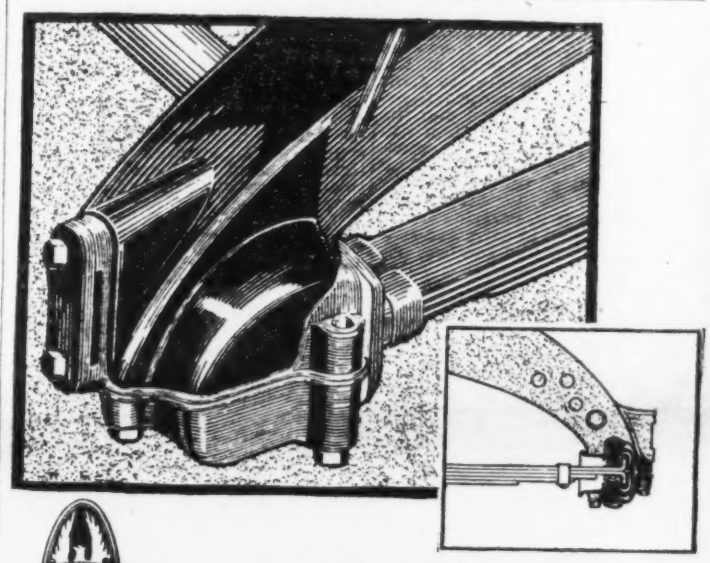
"Effect of Airplane Fuel Line Design on Vapor Lock," O. C. Bridgeman and H. S. White, Bureau of Standards.

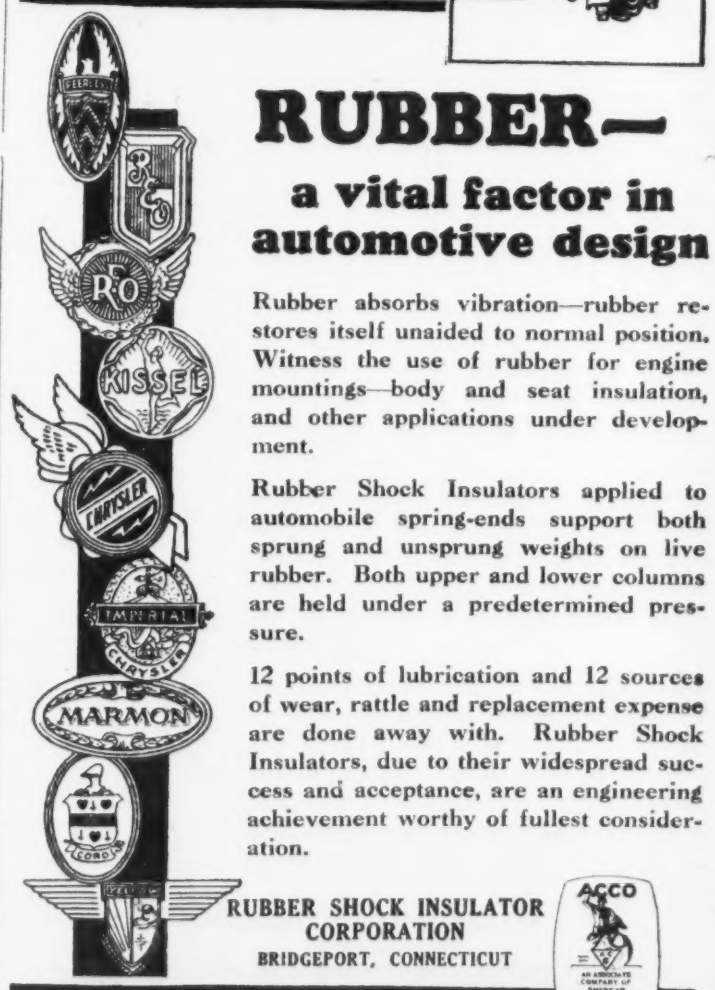
"Aircraft Engine Installation," Arthur Nutt, Curtiss Aeroplane and Motor Company.

10.00 A. M.—Transportation

"Self-Maintenance as Compared With Service Station Maintenance," H. V. Middleworth, Consolidated Gas Company.

Prepared discussion by Joseph Siegel, Metropolitan Distributors, Inc.; Martin Schreiber, Public Service Coordinated Transport; O. M. Brede, General Motors Truck Company; H. C. Marble, the White Company; F. B. Whittemore, Mack-International Motor Truck Corporation; F. K. Glynn, American Telephone and Telegraph Company.





RUBBER—
a vital factor in automotive design

Rubber absorbs vibration—rubber restores itself unaided to normal position. Witness the use of rubber for engine mountings—body and seat insulation, and other applications under development.

Rubber Shock Insulators applied to automobile spring-ends support both sprung and unsprung weights on live rubber. Both upper and lower columns are held under a predetermined pressure.

12 points of lubrication and 12 sources of wear, rattle and replacement expense are done away with. Rubber Shock Insulators, due to their widespread success and acceptance, are an engineering achievement worthy of fullest consideration.

RUBBER SHOCK INSULATOR CORPORATION
BRIDGEPORT, CONNECTICUT

ACCO

Rubber Shock Insulators

Car Dealers Should Go After Maintenance Business

COMMENT AND CRITICISM of the editorial, "DEALERS AND DISTRIBUTORS MAKE AN EXTRA BILLION THIS YEAR," which appeared in Automotive Daily News May 15, are published herewith.

YOUR VIEWS on who shall benefit from the BILLION DOLLARS spent yearly for automobile maintenance are invited. The editorial in question did not refer to the operations of service specialists.

FOOD FOR THOUGHT

In the center spread of your daily issue of Thursday, May 15, there appeared an article signed by you which contained some very valuable "food for thought," and we are anxious that each one of our dealers read this article, so would appreciate very much if you will be kind enough to see that we are mailed fifty copies.

It is our understanding that these copies can be secured at a small cost which we will be glad to pay.

Thanking you for your kind, prompt attention to this matter, we are.

J. H. WHITTINGTON.
Wholesale Manager,
Nash-Texas Co.,
Dallas, Tex.

WANTS TO BROADCAST

It is with keen interest that the writer has read and re-read your instrument of dynamite to all authorized new car dealers in the Automotive Daily News of May 15.

Would you be so kind as to quote us a price for 2,500 copies of your address on coated paper? We are trying to drive these points home every day to authorized new car dealers by merchandising our various accessories through them and them alone. Sometimes it is a question whether we are on the right or wrong path because we realize the majority of business the authorized dealers should get is going into the hands of the super-stations.

We would appreciate a prompt reply and assure you it is our desire to broadcast this message in its entirety.

L. W. SLIFE, Gen. Sales Manager,
Hoyt Distributing Corp.,
Chicago, Ill.

THE ONLY THING TO DO

From a car owner's point of view this is the only sensible thing to do. Every motorist should have his work done in an authorized service station where only authorized parts are used.

J. SULLIVAN,
Service Manager, A. D. Geissler, Overland Distributor, Detroit, Mich.

AN EXCELLENT IDEA

It is a most excellent idea. Authorized service stations and authorized parts are standard throughout the country. Who is better able to furnish parts than the authorized dealer, who maintains an expensive service department and a large stock of parts?

S. W. KENNERLY,
Service Manager, Oldsmobile Branch, Detroit, Mich.

FOR IT 100 PER CENT.

We are certainly in favor of authorized service stations and authorized parts, and have always boosted the procedure recommended in Mr. Tarantous' article. We are for it 100 per cent. J. COLVILLE,
Manager Marmon-Detroit Company, Detroit, Mich.

TREMENDOUS MARKET AVAILABLE

"I noticed in the Automotive Daily News on May 15, Page 6, your editorial regarding the dealers and distributors relative to the eight billion dollar market.

"I heartily agree with you in regards to the tremendous market which is available for them if they will only go after the business on proper servicing of the cars and personal contact. A considerable portion of this business has been turned away from some of the large distributors on account of the way they handle the service end of their business.

"There is one paragraph in your editorial, it is the sixth paragraph, where you express the opinion that you believe the replacement parts which are furnished by outside sources, which are of independent manufacture, are not up to the standard or specifications of the parts coming from the original car factory, not necessarily manufactured by the car factory.

"If this is your belief, Mr. Tarantous, I shall be personally very glad to give you data regarding the replacement market as it is serviced today and I am also writing the NSPA and asking them to send you more complete data.

J. R. RILEY,
National Bushing and Parts Company, Minneapolis, Minn.

OVER 1,100 BUSES OPERATE IN QUEBEC AND ONTARIO

Montreal, May 27.—Official figures show that in 1929 there were 149,418 commercial vehicles, buses and trucks registered in Canada, of which about 1,500 are buses and coaches owned mostly in Quebec and Ontario. It is estimated that there are over 400 buses in Quebec and about 700 in Onario, while only one bus is owned in Prince Edward Island. Many of these are for special sight-seeing and chartered tours, and a considerable number are used by the street railway companies.

AUTOGIRO CO. TO BEGIN COMMERCIAL MANUFACTURE

Philadelphia, May 27.—Commercial manufacture of autogiros at the Autogiro Company plant, Easton Road above Willow Grove, is planned to begin in two months. Two autogiros have been shipped to private flyers in New Zealand from the English factory, thus marking the commencement of commercial production of the "windmill" airplane.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRINGS RESULTS

ADVERTISERS, INC., NAMES MIDDLETON TO MEDIA POST

Detroit, Mich., May 27.—Announcement was made by Lee Anderson, president of Advertisers, Incorporated, advertising counsel for Chrysler Motors, that Harold Middleton has been appointed to the position of assistant - director of the Media division of the agency.

Harold Middleton

Middleton comes to Advertisers, Incorporated, from Forbes Magazines, where he was office manager in this city. Prior to that he was connected with Farm Life Magazine. Middleton was with the C. C. Winningham Advertising Agency for a number of years in the capacity of space buyer and secretary of the company.

KNUDSEN OF CHEVROLET VISITS BIRMINGHAM, ALA.

Birmingham, Ala., May 27 (UTPS).—W. S. Knudsen, president and general manager of the Chevrolet Motor Company, Detroit, was a recent visitor here. He was accompanied by H. J. Klingler, vice-president and general sales manager and L. S. Costley, Southeastern regional manager.

U. S. EXPORTS 699,101 TIRES IN FIRST QUARTER

Washington, May 27.—During the first quarter of this year, American manufacturers exported 699,101 tires, as compared with 477,286 shipped abroad by Canadaian factories, 406,441 by British producers and 295,040 by French plants, it was disclosed today by the rubber division of the Department of Commerce.

Maintenance Profits Issues

June 24, 25, 26

In addition to the regular net paid circulation of Automotive Daily News there will be

6,000 EXTRA DISTRIBUTION

to factory service managers, service managers, distributors and dealers of cars and trucks, jobbers, truck and bus operators having 100 vehicles or more.

These issues will treat editorially of the increased profits to be derived from maintenance of cars and trucks.

There will be leading articles on the newest methods of washing, polishing and lubricating. Illustrations and descriptions of newest equipment for doing this work. Increased maintenance profits by the use of modern shop equipment will be discussed and the best shop equipment to use will be described and illustrated.

There also will be articles dealing with courtesy in the shop; methods of procuring more maintenance work, and other features of great value to every distributor, dealer, service manager and shop man.

Advertising Forms close two days preceding publication dates

Automotive Daily News

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Connecticut's April New Car Sales Show Improvement

4 MONTHS' TOTAL STILL BEHIND '29

Ford, Chevrolet Both Gain Over Last Year's Record

NEW YORK, May 27.—Connecticut's new car registrations in April, with a total of 6,249, showed a huge gain over March, but were 28 per cent. below April, 1929. For the first four months Connecticut registered 14,675 or 18.9 per cent. under the same period of last year.

Ford, Erskine and Viking were the only makes to record gains in April over the same month last year. Black Hawk, Cord, Marquette and Willys, not in production a year ago, had a total registration of 140.

In the first four months, Chevrolet, Ford, Erskine, Pierce-Arrow, Stutz and Viking finished ahead of the same period in 1929. Ford had 839 units more, a gain of 22.2 per cent.; Chevrolet's increase was 40 units, or 1.5 per cent.; Erskine, 47 units, or 67.1 per cent.; Pierce-Arrow, 31 units, or 53.4 per cent.; Stutz, 2 units, or 40 per cent.; Viking, 12 units, or 1,200 per cent.

The registration for April, compared with the same month last year, showing percentage gain or loss, follows:

	1930	1929	% Gain or Loss
Auburn	51	84	*39.3
Black Hawk	2	..	...
Buick	307	381	*19.4
Cadillac	59	78	*24.4
Chevrolet	1,068	1,251	*14.6
Chrysler	208	221	* 5.9
Cord	3	..	...
De Soto	166	205	*19.0
Dodge	234	331	*29.3
Durant	33	79	*56.9
Erskine	42	30	40.0
Essex	260	680	*61.8
Ford	2,058	1,971	4.4
Franklin	17	52	*67.3
Gardner	3	4	*25.0
Graham	126	227	*44.5
Hudson	133	185	*28.1
Hupmobile	112	149	*24.8
Jordan	8	11	*27.3
La Salle	71	109	*34.8
Lincoln	6	20	*70.0
Marmon-R'sevelt	32	86	*62.8
Marquette	70	..	...
Nash	152	391	*61.1
Oakland	87	105	*17.1
Oldsmobile	140	209	*61.7
Packard	130	219	*40.6
Peerless	10	28	*64.3
Pierce-Arrow	31	38	*18.4
Plymouth	70	149	*53.0
Pontiac	218	539	*59.6
Reo	67	121	*44.6
Studebaker	123	252	*51.2
Stutz	2	3	*33.3
Viking	7	1	600.0
Whippet	45	331	*86.4
Willys	65	..	...
Willys-Knight	31	111	*72.1
Windsor	1	3	*66.6
Miscellaneous	1	27	...
Total	6,249	8,681	*28.0

*Loss.

The four months' registration as compared with the same period of last year, showing percentage gain or loss, follows:

	1930	1929	Per C't. Gain or Loss
Auburn	101	169	*40.2
Black Hawk	5	..	...
Buick	707	840	*15.8
Cadillac	109	171	*56.8
Chevrolet	2,758	2,718	1.5
Chrysler	421	478	*11.9
Cord	4	..	...
De Soto	353	430	*17.9
Dodge	624	773	*19.3
Durant	75	108	*31.5
Erskine	117	70	67.1
Essex	738	1,573	*53.1
Ford	4,566	3,727	22.2
Franklin	41	100	*59
Gardner	3	13	*76.9
Graham	259	436	*41.1
Hudson	311	429	*27.5
Hupmobile	236	315	*25.1
Jordan	14	17	*17.6
La Salle	159	240	*33.7
Lincoln	19	35	*45.7
Marmon-R'sevelt	69	121	*42.9
Marquette	129	..	...
Nash	342	778	*56.1
Oakland	212	250	*15.2
Oldsmobile	284	416	*41.5
Packard	263	445	*41.1
Peerless	31	45	*31.1
Pierce-Arrow	89	58	53.4
Plymouth	190	327	*41.9
Pontiac	537	1,129	*52.4
Reo	191	237	*19.4
Studebaker	341	568	*39.9
Stutz	7	5	40
Viking	13	1	1,200
Whippet	68	714	*90.5
Willys	157	..	..
Willys-Knight	97	218	*55.5
Windsor	1	9	*88.8
Miscellaneous	13	79	..
Total	14,657	18,084	*18.9

*Loss.

FORD SALES IN KANSAS UP IN FIRST QUARTER

Wichita, Kan., May 27.—There were 7,651 new automobiles registered in Kansas during the first quarter, and of this number 3,204, or 41.9 per cent. were Fords, according to Wichita Ford distributors. This record, the dealers point out, reflects the popular appreciation of the new Ford body types.

Personal Briefs

Boston, Mass., May 27.—George G. Chapman, for the past two years connected with the stock department of the International Harvester Company at the New England branch headquarters, has been transferred to the Philadelphia branch.

South Bend, Wash., May 27.—Frank Schuka has been promoted from the Raymond Auto Company to become manager of the South Bend Motor Company. He succeeds Frank Wade, who has been transferred to the Laspa Motor Company in Astoria, Ore.

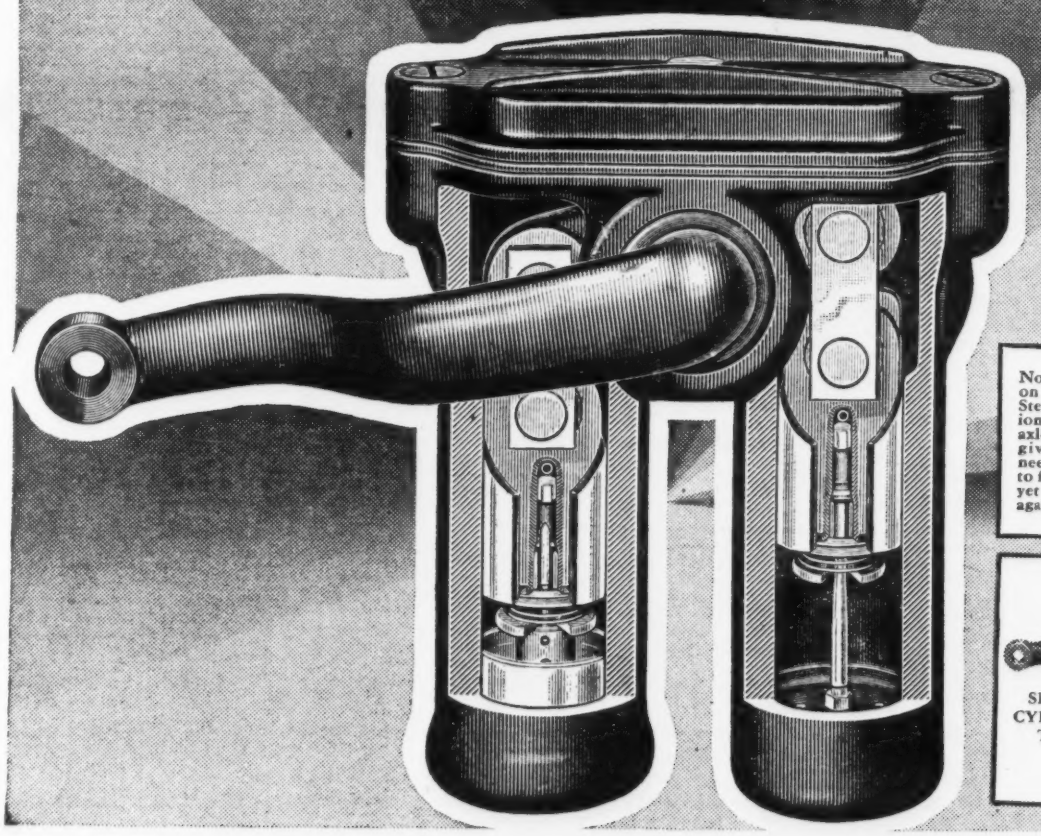
Hollywood, Cal., May 27.—F. J. Holmes has been appointed sales manager for the commercial car division of Butts-Andrews, Inc., Graham-Paige dealer.

Hartford, Conn., May 27.—David J. Munnelly, for the past twelve years associated with the sale of Studebaker cars, has resigned from the sales staff of the Colonial Auto Company, Studebaker distributor, to become general manager of Burke-Nash, Inc., distributor of the Nash in the Hartford territory.

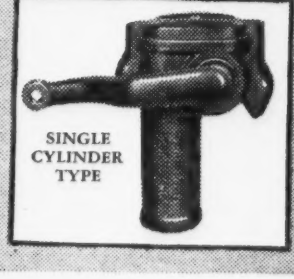
Philadelphia, May 27.—Following the resignation of E. J. Powell, who is retiring from active business, H. L. Shaffer will become president of the West Philadelphia Buick Company, handling Buick and Marquette cars throughout this city and the suburban sections. Mr. Shaffer formerly was vice-president of the Integrity Trust Company. It is understood he will withdraw from active banking and financial affairs to direct the business of the automobile company here.

Milwaukee, Wis., May 27.—M. A. Parr, formerly special representative of this division in charge of sales for the Standard Oil Company, has been named sales manager for the R. W. Vondette Company, local Ford dealer.

100% SELF ADJUSTING TO ALL LOADS AND ALL ROADS



Note the tapered metering pin on the compression side of the Stewart-Warner Hydro-Cushion. It increases resistance as the axle nears the frame, thereby giving proper control where needed. Thus it permits springs to flex freely in normal position, yet builds up adequate resistance against the most vicious shocks.



SINGLE CYLINDER TYPE

Every Precedent of Spring Control Efficiency SMASHED by this Combination of Features

1. *Compensator for* LOAD *Variations.*
2. *Variable By-Pass for* ROAD *Variation* controlling Rebound and Side-Sway.
3. *Variable By-Pass for* ROAD *Variation* controlling Spring Compression.
4. *Leak-Proof Construction.*
5. *No Service Adjustments.*
6. *A Type and Size for Every Need*—each 100% Self Adjusting.

STEWART-HYDRO

THE DOUBLE ACTING . .

Effect of Low-Pressure Tires on Axle Design

This paper on "The Effect of Low Pressure Tires on Axle Design" was presented Tuesday by L. R. Buckendale, Timken-Detroit Axle Company, at the summer meeting of the S. A. E.

The automotive tire has always had a profound effect on the performance of automobiles, buses and trucks, but this has been an indirect influence. The development of the tire has caused it to become increasingly more intimately tied up with the design of the vehicle. Today engineers must recognize the tires as a fundamental starting point in a proposed design.

If we cast our eyes back to the early cars, we visualize, first, the high-wheeled, steel-tired buggy. The steel tire quickly gave way to a narrow band of rubber, which deadened the noise mostly and thus helped the "ride." The amount of rubber increased and the diameter of wheels decreased. Pneumatic tires appeared, fenders also became common. At this point is where the tires started to influence the design of the vehicle. The early pneumatic tires were subject to many ills, some of which were inherent in the tires and some were influences of the vehicle itself. Steering geometry, as we now call it, was given attention. Inasmuch as the tires were very small in section and the wheels still relatively large in diameter, there was ample room for any necessary steering linkage. The Ackerman steering gear, which we know as the steering cross tube, was common, and, as the tire and wheel offered no limitations, it was sometimes placed in front of the axle. The old horse-drawn vehicles had established fifty-six inches as the standard track, and the automobile followed the same standard. The fifty-six-inch track served very well for the passenger car until very recently, but the commercial vehicle quickly began to crowd this limitation, because, as engines became available with greater horse power, the weight and size of the trucks grew, and naturally the tires kept pace. But as yet the tires were solid on trucks, and the track was slowly increased to provide room for the other parts of the vehicle and also to provide stability.

Since the roads were narrow, the increasing size of the truck attracted the attention of legislation and a series of limitations on overall width, length, etc., appeared. These limitations at first did not hamper the design a great deal, because there was ample room for tires, wheels, brakes, frame, etc.

Bigger engines, however, had increased the average speed gradually until a limit of speed was established. This limit was fixed, in the first place, because the cushioning effect of the solid tire was limited and destructive vibration and road shock set the limit for speed. The use of the truck for hauling human freight or as a motor coach brought demand for easier riding.

The pneumatic tires started to appear on the truck. Naturally, these pneumatics were larger editions of the tires developed on the passenger cars, and, although larger in space requirements than the solid tires, there was still ample room for the other elements of the truck or bus.

The commercial vehicle at this state of development had become conventionalized in many details. The engine was in front, and drove through a clutch and gear box to the rear axle. The front axle steered by means of cross tube either in front or behind the axle. Brakes were mounted on the rear axle. The drive was adjacent to the engine and the cargo was carried on the after portion. The percentage of weight carried on the two rear tires was much greater than on the two front tires. (Reference is now being made to the general type, and not to specialized vehicles.) This forced the rear tires to become much larger than the front tires. This difference in front and rear tires made two spares a necessity and the larger rear tires were very costly.

At this point the idea of two smaller rear tires, side by side, on the same wheel appeared. By this means, tire capacity, in keeping with the weight of distribution, was achieved with six tires, all of the same size, and only one spare necessary.

The fact that the two tires, side by side, took up more of the available width and the additional complication of the dual wheel brought the tire people and the axle people into realization of each other's existence.

The pneumatic tire by its increased cushioning properties had increased the maximum average speed, and this speed made greater demands on the brakes. Brakes, however, had been developing independently and had assumed diameters and widths which had no particular relation to the tires. The dual tire, however, because of its smaller internal diameter and increased width, began to take more of the space available to the brakes. On the other hand, the demands on the brakes were increasing because of higher speeds and traffic problems, so the tendency of the brakes were to be forced smaller in diameter and wider. This increase in width of brakes brought drums closer to the springs. Springs, however, bore a definite relation to the width of vehicle frame, so frames became narrower.

In the meantime, two developments were taking place in the passenger car, which, as the parent of the truck and bus, was to exert a profound effect on the truck and bus design.

Front wheel brakes were introduced experimentally, and, after going through a controversial and development period, settled down as an accepted standard. It was, therefore, natural that, as the limit of space available for rear brakes on trucks and buses was reached, front brakes should be adopted. Front brakes on passenger cars, however, did not involve the problems encountered on the larger vehicles. The front brakes, by introducing a new force acting on the wheel, added another factor that had to be considered in the steering geometry. The distance between the center of the tire contact and the axle of the king pin had to be held within a certain distance, because this distance was the lever arm, which determined the magnitude of the forces acting on the steering linkage. Fig. 8 shows a typical front axle before the advent of four-wheel brakes. It will be noted that the king pins are parallel and the lever arm (A) is considerable. It should also be noted that there is no space limitation on the cross tube, and either a clevis type, Fig. 9A, or a ball type, Fig. 9B, can be used. So the tendency was to pull the tire in closer to the king pin and also incline the king pins from the vertical in order to bring the above lever arm within practical limits. The inclination of the king pin eliminated the clevis type of cross tube, Fig. 9A, because of the double motion required by the fact that the wheels now rotated about non-parallel axes. The ball tube shown in Fig. 9B was now essential, but the overhang from the ball center to the end of the tube became embarrassing, so the tube end shown in Fig. 9C appeared. This permitted the ball center to come closer to the tire, and, in addition, was self-adjusting.

Although front axles had not reached any orverall limitations fixed by legislation, still the prevailing fashions in fenders caused designers to keep front tracks as narrow

(Continued on page 10)

A NEW
SPRING CONTROL

Especially suited to light and flexible car springs

With Stewart-Warner Hydro-Cushion Equipment, lighter, more flexible springs can be used to advantage. Unhampered flexibility is retained for the "boulevard ride." Yet even under the most violent compression impulses, the springs are under proper control.

This unusual flexibility of compression control is obtained through use of a Variable By-Pass in the "compression" cylinder, as well as in the rebound side of the Hydro-Cushion. It builds up resistance to excessive spring action. It builds it up in exact accordance with the need.

Stewart-Warner Hydro-Cushions, made by the largest manufacturers of automotive accessories in the world, are opening to car manufacturers an entirely new range of possibilities as affecting design and control of car springs. Note the six Hydro-Cushion features listed. Investigate further. Our engineers are at your command.

STEWART-WARNER CORPORATION, Chicago, Illinois

WARNER
CUSHIONS
TAPERED SPRING CONTROL

Effect of Low-Pressure Tires on Axle Design

(Continued from Page 9)

as possible, with the result that the tires crowded both the brakes and the steering linkage. This was the start of compromise in steering geometry. Fig. 10 shows the appearance of the front axle and the start of compromise in design.

At this time, another development started in the passenger car. This was the introduction of pneumatic tires of greatly decreased air pressure and corresponding increase in carcass sizes for the same carrying capacity. There were many reasons for this innovation. The low pressure tires, as they are called, gave much better riding qualities and shock absorbing ability as well as increased life or mileage. These characteristics immediately increased the speed range of the passenger cars. It was natural, of course, that these same features should cause the low pressure tire to appear in the heavy duty vehicle problem.

In the meantime, the highway was growing and notice was taken of the greater destructive ability of the heavier trucks and buses on the road surfaces, the increasing size of which grew faster than the width of highways increased and caused pleasure car drivers to complain. The result was legislation. This legislation was typical in that it was prohibitive and arbitrary rather than flexible and capable of adjustment to varying conditions and developments in the automotive vehicle.

So we have the picture today of each state having laws restricting motor vehicles as to maximum width, length, total wight, weight per wheel, etc., and hardly any two states agree. A majority of the states have an overall width limitation of 96 inches, a few have 90 inches and one has 84 inches. There is a tendency to limit the gross weight of a four-wheeled vehicle to about 24,000 pounds.

The introduction of the low pressure tire caused a vehicle designed for the average maximum permissible load to exceed the 84 inches, and even the 90-inch overall limitation, and come hard up against the average 96-inch limitation. Those

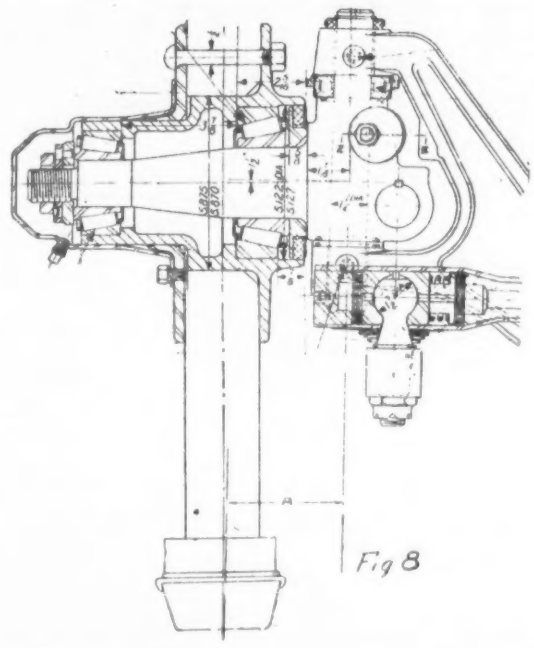


Fig 8

states having less than 96-inch limitation are restricting the use of the latest automotive developments, with the result that in these states the larger and more efficient vehicles cannot be used, nor can either the benefits of the less destructive effects of low pressure tires or of six-wheel vehicles on the road surface of highways be utilized.

Let us take the average 96-inch width restriction and the maximum gross figure of 24,000 pounds, and design a vehicle to use the low pressure tires. If we assume that we will use dual tires on the rear and singles on the front (the reason for this will be explained), we have six tires on the vehicle which must carry 24,000 pounds. So each tire must carry 4,000 pounds. This will give us 8,000 pounds on the front end and 16,000 pounds on the rear tires. This is the ideal condition. In practice, we will find that the size of the engine required will compel shifting the front axle and rear axle positions, so that less weight comes on the front and more on the rear. (This fact has caused some legislation to fix the minimum on the front at 20 per cent. of the gross.) Let us assume we get 25 per cent. front and 75 per cent. rear. We must now get from the tire engineers the dimensions of the tire required to carry .75 × 24,000 ÷ 4, or 4,500 pounds. We find that the required tire would be called a 10.50-20, with a nominal capacity of 4,700 pounds. The tire engineer says that when used as dual, this tire must be set at a minimum of 12¾ inches center to center. The actual width of the tire is approximately 11 inches. So, if we position the outer tires at 95½ inches to allow ½-inch spread under load, we have the track of the outer tires 95½ — 11 = 84½ inches. The track of the inner tires is 84½ — 12¾ — 12¾ = 59 inches. The distance between the inner tires is 59—11, or 48 inches.

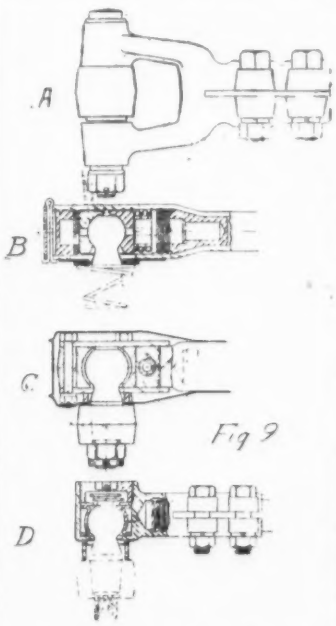


Fig 9

Within this forty-eight inches we must find room for the driving mechanism, the vehicle springs, the brakes (which legislation says must be on the wheels) and also clearance for the various parts. We will neglect the brakes for the moment and place the springs so as to clear the tires. With a 3½-inch spring, we find we have a spring center of 40½ inches. If we use a 1-inch clip to hold the springs to the axle and ⅝-inch clearance to the frame, we come out with 34 inches, maximum permissible width of frame. We have not as yet mentioned brakes. The brake engineers tell us that to stop a 24,000-pound load operating at passenger car speeds will require approximately a 17¼-inch effective braking diameter and a width of 5 or 5½ inches. The diameter is determined by the practical limit to the pressure which may be applied to the braking surfaces, using self-energizing or auxiliary power, such as air, etc. These pressures are also limited by the maximum pressure ability of the friction surfaces, with reasonable life expectation.

Let us now make up a composite diagram of the conditions we have set up, and it will readily be seen that we brought up many problems. (See Fig. 11.)

We find that when we attempt to place the brake on the wheel it must be nested completely inside the inner tire. With the tire available, we have a diameter of 20 inches inside the beads. If we subtract the 17¼-inch brake diameter, there remains a radial clearance between tire and friction surface of the brake of 1⅜ inches. In this space we must find room for the brake drum, the rim for the tire, means of holding the rim to the wheel, the tire valve and still leave room for the flow of air required to carry off the heat generated by the brakes. This brings us face to face with a real problem. If we consider the brake drum required, we find the old pressed-type drum (as shown in Fig. 12 A) is out, because a flange is required to give stiffness, and there is no room for flanges. The characteristics required in the drum are maximum resistance to distortion, due to the high pressure set up by the shoes and also maximum ability to absorb and dissipate heat. Maximum resistance to abrasion is also vital. Out of the many materials used, the cast alloy iron is apparently emerging as the most successful. (See Fig. 12 B.) Castings, of course, permit an unlimited range of shapes. The most desirable form is to put a series of annular ribs on the exterior surface. (See Fig 12 C.) These ribs increase the heat-dissipating ability and increase the stiffness of the brake drum for given mass of iron. It is also desirable to run radial ribs up the back face of the drum, continuing them at right angles to the annular ribs on the outer surface. These radial ribs permit a lighter drum and at the same time give increased turbulence to the air, helping to dissipate heat.

If we attempt to put such a drum into a 20-inch-base tire, we find it will not go. We must compromise on the height of ribs to merely clear the rims and also must cut grooves or notches to clear the tire valves.

The result of the proximity of the drums to the tires has been to pass heat from the brakes to the tires. This heat, added to the heat set up by the action of the tires themselves, has caused bead temperatures which are too high for reasonable tire life.

The result is the tire engineer wants to reduce the brake diameter to get the drum away from his tire. If this could be done without increasing the width of brake, the result would be higher drum temperature, because the amount of heat remaining the same would have to be dissipated over a smaller surface. The resulting high drum temperature would radiate more heat to the tire and cancel the benefit from the increased space. In addition, we started with the smallest practical brake diameter. We cannot increase the width because the overall width limitation prevents. There seems to be only one answer, and that is to increase the inside diameter of the tire used on vehicles above a certain weight. It is suggested that we consider a 22-inch base for tires of 4,000 pounds or greater carrying capacity. Fig. 13 shows the advantage that this one inch additional radial clearance of the 22-inch base tire over the 20-inch base tire would give. The drum can now be made reasonably heavy and ribbed both annularly and radially. There is ample air gap for heat dissipation as contrasted with Fig. 11.

Let us again refer to the diagram in Fig. 11 and see what other limitations have occurred. It will be noticed that no clearance has been provided for chains. We have fixed the spring width at 3½ inches.

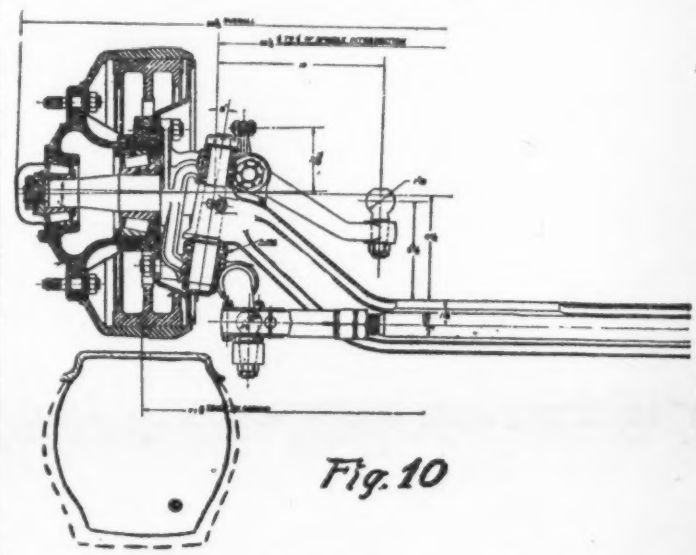


Fig. 10

Wider springs would permit lower spring piles and easier riding and lower maximum impact on the road. The desirable 5-inch spring would increase the overall to 98½ inches. The 40½-inch spring center is hardly sufficient to provide lateral stability, especially when the increasing maximum speeds are considered. The 34-inch frame, with adequate flanges, brings us a problem in trying to find room for the engines required to move the vehicle at the speeds made possible by the low-pressure tires.

Some relief has been offered by the six-wheel vehicle. Distributing the load on two rear axles has lessened the impact on the roads. This fact has been recognized by some states permitting greater gross loads on six wheelers—in some cases 50 per cent. more. The result of raising the permissible weight is that the large six-wheeler has come to require the same dual tires as the four-wheeler we considered and the limitations fixed by the overall of 96 inches are even more severe. In the table attached, it has been attempted to set up the various high pressure and low pressure tires, together with their rated capacities. This table also shows the recommended spacing with the actual tire dimensions and the dimensions overall and between the inner tires to which the various sizes work out. It will be noticed that the 9.00x20-tire is the largest which can be

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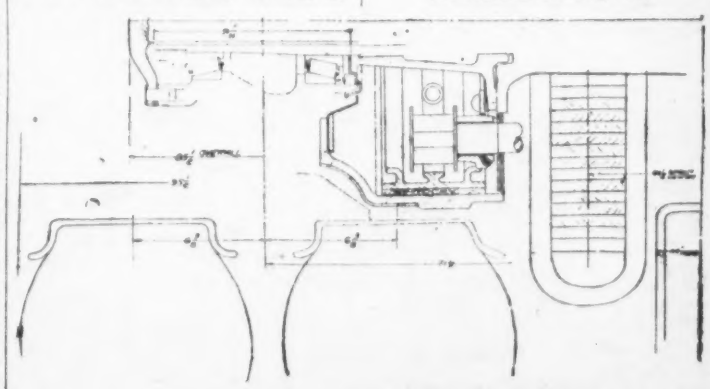


Fig. 11

NO DRAFTS—NO DUST

PERFECT VENTILATION

Frequently motorists sacrifice ventilation for immediate comfort in storms and cold weather. Windows are closed with resultant headaches—danger from poor vision, not hearing or giving signals.

The position of Dole Draft Deflectors in the door openings causes them to act on the same principle as the louvre openings in the hood. The vacuum behind the deflectors, created by the forward motion of the car, sucks the stale air from the interior and at the same time allows fresh air to enter without disagreeable drafts and unpleasant cross currents.

Dole Draft Deflectors add a touch of smartness and refinement. Leading manufacturers have already voiced their approval. The deflectors have the appearance of a permanent built-in part of the car, yet can be installed in five minutes without drilling or marring body finish. They remain in position and are rattle proof. All metal parts chromium plated. Shatter proof safety glass is standard. Good plate glass on request.

Dealers—Put Them on Floor Models

Nine out of ten will be sold with the car—at a handsome profit to you—if necessary, they can be removed without marring car.

THE DOLE VALVE COMPANY

1923 Carroll Ave., Chicago, Illinois

Also manufacturers of Dole Double Compression Couplings, Dole Ball-Roll Couplings, Dole Thermostats, Dole Primers

Dole

DRAFT DEFLECTORS

Electrically Operated Vehicle Brakes Discussed

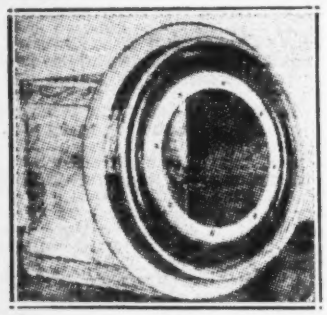
(Continued from Page 4)

drum. This rotation continues until the brake band expands against the drum surface, when no further rotation of the magnet is possible. From this point, until the current is released, the armature simply slips on the magnet facing, retaining, however, its drag on the magnet, which, in turn, continues the pressure on the brake band, maintaining the brake in operation.

Upon releasing the current the entire assembly returns to the neutral, or off position, by the action of the spring which connects the two ends of the brake band. The action is the same whether running ahead or reversing.

Brake is Non-Adjustable

No provision is necessary to adjust the brake band for wear of the liner, because the magnet unit will follow up the brake band until contact is made between the liner and the drum surface, regardless of the clearance between them. This take-up is limited on passenger-car



brakes to one-eighth-inch wear of the brake lining, after which relining is necessary.

The amount of braking exerted is dependent upon the amount of current passing through the magnet, and this is controlled by the amount of pedal depression. The action of the brakes, therefore, is no different than when driving any conventional car, with the exception that the brake-pedal pressure may be just as light as the operator desires. The operator does not furnish any of the pressure necessary to do the actual braking; all that he is doing is moving a graduated switch.

Any predetermined amount of braking can be built into this type of brake for the particular vehicle equipped and the rate of stopping desired. This has the advantage that the brake structure cannot be overloaded if the original design is built to contend with the predetermined loads.

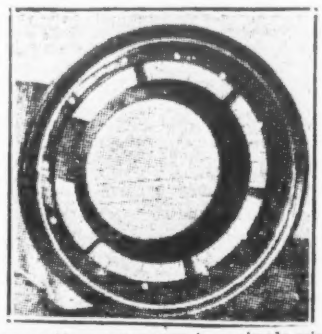
The switch or brake controller is a rheostat of rather unique design. As shown in Fig. 7, it consists of a group of bronze leaves. A curved arm, when moved by the pedal, connects with these leaves one by one. The first leaf is connected to the battery, and as soon as the arm connects with this leaf, the arm carries battery current. The next leaf of the switch is connected to the stoplight on the car, and all the following leaves feed into the brake circuit. As each leaf is picked up, a certain amount of resistance is removed from the brake circuit, with a consequent increase in the amount of current flowing to the brakes. All the resistance units in this controller are arranged in parallel, so that, should one or more of these resistance units burn out, it would not affect the operation of the others. Since the last step of the controller is a direct connection to the brake, it is not possible to have a complete failure of the brake controller.

Overload fuses are included in the brake circuit and are arranged so that, should one brake for any reason become grounded, the corresponding brake, front or rear, will also be cut out of the circuit. In this way either front or rear brakes will remain in operation, a condition that will be noticeable to the driver and the fault can be rectified without a complete breakdown being experienced.

A manually operated switch, that can have any convenient number of intensity points.

This switch can be moved at the will of the driver to give any amount of braking desired. The amount usually is determined by the condition of the pavement, whether icy, wet or dry. The use of this switch does not interfere in any way with the control; it simply creates the same graduation of control at uniformly less intensity than in the full-brake position.

From the standpoint of chassis installation, the electric brake has the advantage of simplicity. All the



connection necessary is a single wire to each brake. The controller can be mounted at any convenient point and connected to the brake pedal by a simple linkage. The wire recommended for brake installation is of very rugged mechanical construction, having, in addition to the usual installation, a covering of treated loom woven right into the structure. This wire has been found to be virtually indestructible in brake service. Care must, of course, be taken to see that the wire is securely fastened at proper points and that strictly electrical connections are relieved from mechanical stresses.

AUTOMATIC REVERSE BRAKING

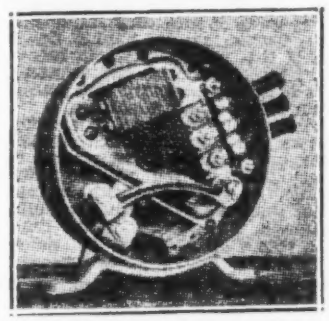
It is possible with the electric brake to install back of the transmission a friction-operated switch that will be open or off as long as the car is traveling ahead. When, on a slight incline for example, the car starts to roll backward, this switch will close and automatically set the brakes on all four wheels. By the use of an opening switch, this unit is disconnected electrically by the gear shift lever during the process of backing in reverse.

BRAKE PERFORMANCE

It is possible to get very erroneous results in measuring brake performance on cars. When a car is traveling at eighty-eight feet per second, small fractions of a second make a wide difference in the apparent stop obtained. In making stopping tests, the use of a pistol the trigger of which is operated electrically gives very satisfactory results when properly installed. If the switch for operating this pistol is placed at the start of the pedal movement, the stop measured will be an actual measure of the brake application from the time the operator finds it necessary to set the brakes. Should the pistol switch be placed at the completion of the pedal stroke, a much faster stop will be indicated. In fact, in some cases the apparent deceleration will be amazing. To obtain a reliable comparison of the performance of brakes it is desirable that the method of testing be carefully standardized, because, at high speeds, the error will be very substantial if this is not done.

AMPLIFLING OF BRAKE MECHANISM NECESSARY

It is generally conceded that some method other than mere physical



force on the part of the driver must be employed to obtain satisfactory brake performance with reasonable pedal pressures. To get the best results that are possible by the use of externally augmented brakes, whether booster or power type, the following salient points require consideration from chassis engineers:—

(1) If satisfactory stopping of vehicles is to be accomplished, means must be evolved to increase the ability of front-end design to resist brake torsional forces.

(2) These means should include precaution against reversal of castor.

(3) They should contemplate the absorption of braking forces independent of the spring suspension. This is advisable in order to eliminate the irregularities arising from unequal deflection of opposite front springs. Some types of spring shackles also allow differences of position to take place in opposite ends of the front axle.

(4) The position of the front steering-arm ball should be worked out as closely as possible to a neutral position, so that the change in front-axle position during brake applications will not impose any appreciable load on the steering-gear connecting rod. If this is not done, the control of the front end of the car will be erratic and give the impression of "wandering."

FLORIDA SUPREME COURT UPHOLDS TRANSPORT ACT

Tallahassee, Fla., May 27.—The Florida Supreme Court has upheld the validity of the 1929 legislative act placing motor vehicle transportation companies under the jurisdiction of the Florida Railroad Commission.

The court, in an opinion by Justice J. B. Whitfield and unanimously agreed upon, reversed an order of the Circuit Court for Duval county, in a case in which E. S. Smith of Jacksonville was prosecuted for his alleged failure to obtain a certificate of convenience from the railroad commission and to pay the mileage tax imposed upon such motor vehicle operators.

The Circuit Court ordered Smith discharged from custody in habeas corpus proceedings on the ground that the law was invalid, as it applied to private carriers under special contract.

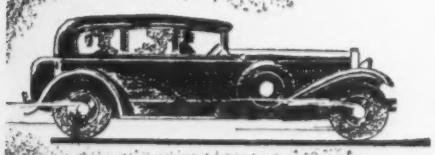
OPENS MACHINE SHOP

Rutland, Vt., May 27.—A machine shop equipped for grinding automobile cylinders, tool making and repairing has been opened here by John A. Gilbert.

BENDIX PRODUCTS

AUTOMOBILE · · · · AVIATION

A group of vital units employed in starting, going, navigating and stopping—which have contributed largely to automobile and airplane development.

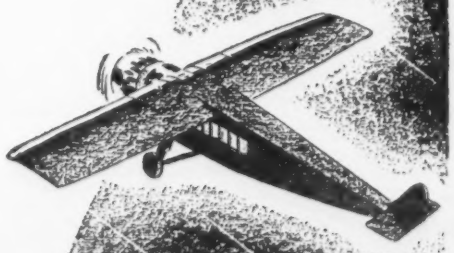


AUTOMOBILE

Bendix Starter Drive
Bendix 4 Brakes
Hydraulic Brakes (Lockheed)
Bendix-Westinghouse Automotive Air Brakes
B-K Vacuum Brake Boosters
Bendix-Cowdrey Brake Testers
Bendix Stromberg Automotive Carburetors
Automotive Diesel Engines

AVIATION

Bendix Airplane Wheels and Brakes
Eclipse Aviation Engine Starters and Generators
Bendix-Cowdrey Brake Testers for Aircraft
Delco Electrical Equipment
Pioneer Aviation Instruments
Scintilla Magnetos for Airplanes
Bendix Stromberg Carburetors for Aircraft



BENDIX AVIATION CORPORATION

CHICAGO NEW YORK

MERCHANDISING ACCESSORIES EQUIPMENT **WHOLESALE** DISTRIBUTION SHOP EQUIPMENT REPLACEMENTS

SEATTLE REPORTS BIG IMPROVEMENT

End of Gas War Spurts Jobber Business In April

SEATTLE, Wash., May 27.—**The automotive curve is distinctly upward with the usual spring improvement at hand, and a big tourist season for the favored Northwest, not far away. The latter part of April found automotive parts, equipment and accessory jobbers doing a decidedly better business. All things considered, April turned out to be a normal month, with the gains toward the end, putting it somewhat above the corresponding month of 1929.**

One favorable development was the settlement of the gas war, which had slowed up sales to a "hand-to-mouth" rate the previous two months, was the settlement of the "gas war." With gasoline dropping as low as 11 cents and price cutters on the rampage, it hurt the morale of the entire automotive industry. Shops that wanted to buy shop equipment, held off. Pospect lists continued to grow and are now at the peak. Dealers expect to close on many of these transactions that have been "hanging fire" now that the war is over. There are still some rumblings of war, and a few incurable price-slashers, but the industry is on a fairly stable basis now.

The effect of the settlement was felt immediately. Service men realize more than ever that machinery is needed to keep in the business today.

Reports from Spokane, Wenatchee and Yakima are that business is much better, and outlook good for the summer. The lumber industry is off in Washington. This is hurting such lumber centers as Tacoma, Aberdeen and Bellingham. But good weather is resulting in business picking up in these centers also.

A new pulp mill at Port Angeles in the Olympic Peninsula country, is helping things in that corner. Around Mount Vernon and Sedro Woolley the farming and dairy interests are running steady and so is automotive business.

The decks were cleared for a good month in May, with repair shops reporting increased business. This naturally spurs up trade for the

Editor's Column

E. M. SHEEHAN, president of Motive Parts Company of Pennsylvania, says that making collections is one of the most delicate jobs that the parts jobber has to contend with. In his organization he handles all the collection items. In cases where the salesman calls on the garage trade he lets him collect the bills. If the salesman is unable to accomplish anything with the trade he makes a personal call with him and endeavors to collect the account in the form of small payments. In the meantime the customer must pay cash.

"It is our experience with this class of trade," he says, "that the man calling is nothing more than a missionary man. If he drives business in to us it does not always open up an oopportunity for them to get open account. If the salesman takes an order, and we deliver it, or he takes it out, they must have some excuse for not paying for it, and if the item is small, in lots of cases the material is left, especally if it is a new customer and he has given fairly good references.

"As to our commercial accounts and large car distributors, the salesman has nothing whatever to do with the collection of these accounts, as he deals with a man other than the one paying the bills. I handle all the collection items with this class of trade. The salesman covering this trade is kept informed as to how they are paying their bills.

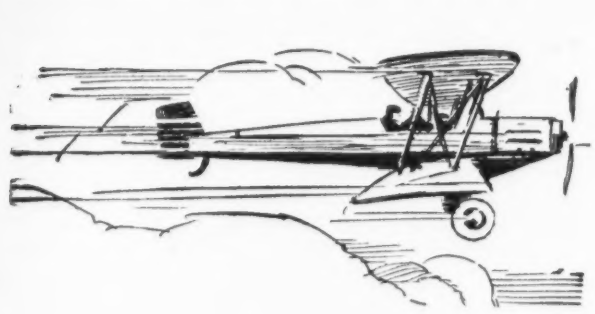
"If an account is beginning to slow up in the way of payments he instructs the salesman not to insist upon an order. In case he brings in an order, it is held until such time as President Sheehan gets in touch with the auditor or the treasurer and receives payment on the account. It has been his experience that losses on charge accounts come from bigger companies.

"Of course, all jobbers are no doubt aware of the fact that we are doing business with a trade that, probably, comprises the poorest type of business men," he continues. "These boys mean well, but the car owner takes advantage of the repair man. If a repair man has to pay cash for his merchandise it means that he is going to be sure to get his money when the job leaves his shop.

"In order that parts jobbers may be more successful we must bear down harder on the credit situation. If we don't it will eventually get the upper hand on us. Naturally, if we do not get the money for the merchandise we are selling we cannot pay the manufactures, and this means that sooner or later some of us will pass out of the picture.

"We have never used any sort of form lettere to collect money from the trade, but we are continually calling upon them either by letter, phone or in person.

"We believe that a personal contact of some of the executives of the parts houses with their garage trade brings them more in contact with these men and it is much easier to do business with them. They know that when some officer of the parts house calls he is giving the matter his personal attention, and we believe this has more weight when collecting bills. Along with this, we think that it gives more confidence to these particular customers."

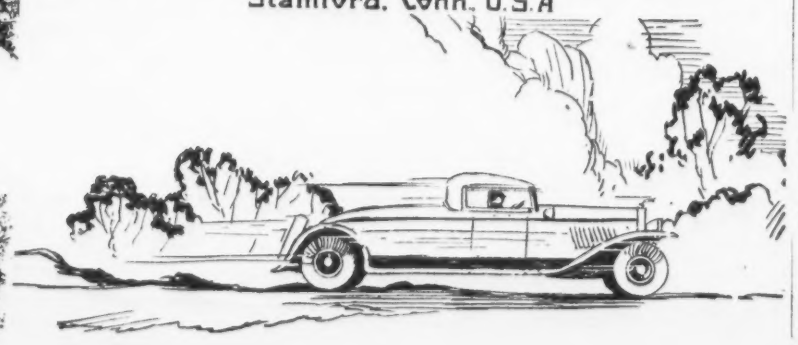


NORMA-HOFFMANN
PRECISION BEARINGS

In the full range of sizes, in Light, Medium and Heavy Series.

—"the difference in service is so much greater than the few cents in price."

NORMA-HOFFMANN BEARINGS CORPORATION
Stamford, Conn. U.S.A



Milwaukee Jobber Backs Belief That Business Will Improve; Takes More Space

Wisconsin Magneto Company Moves into New Building With Nearly Triple the Space Of Its Old Quarters

MILWAUKEE, Wis., May 27.—Backing his belief that the current business depression is only temporary, Clarence M. Montz, head of the Wisconsin Magneto Company, has moved into a new, modern $60,000 building at 522-26 Broadway St.

Expansion of business, which last year doubled the volume of the preceding year, and the need for more floor space to take care of increased local trade, made a new location imperative. The new building, a two-story concrete structure, with each floor 68 by 122 feet, has two and three-quarter times the floor space of the old building, while the shop has twice the space of the former repair department.

The building is fireproof throughout and is equipped with the latest devices for the speedy handling of all repair jobs in its line. The main floor is occupied by the offices and the stock room, with space in the rear for leaving cars before they are shot into the repair department on the second floor. Five clerks take care of the stockroom, where everything is arranged so as to enable orders to be filled without delay. Ten sets of cabinets, each set extending back about fifty feet, give plenty of space for all products. Individual jars, each one numbered and not interchangeable to prevent confusion, keep all the parts free from dust and also easily accessible. The number of cabinets is double that used in the old establishment.

The repair department at present employs eight men, although the twelve benches installed will permit a force of twelve workmen. The shop is well-lighted and each bench is equipped with an individual air hose for cleaning, and each part, before it leaves the shop, is put through a special spraying machine, which insures a factory-like job. The ventilation system also was installed with especial attention being paid to condition of the worker. A number of air ducts have been installed in the floor, to which rubber hoses leading from the muffler of cars are attached, thus preventing the escape of any injurious fumes from running motors.

The Wisconsin Magneto Company is the authorized distributor for over forty manufacturers and specializes in ignition, starting and lighting, carburetor parts, and shock absorbers. All manufacturers are leaders in their field and among them are: A C Spark Plug Company, Aid Manufacturing Company, American Bosch Magneto Corporation, Atwater-Kent Manufacturing Company, Autopulse Corporation, Briggs & Stratton Corporation, Carter Carburetor Corporation, Champion Spark Plug Company, Clum Manufacturing Company, De Jon Electric Corporation, Delco-Remy Corporation, E. A. Laboratories, Inc., Eclipse Machine Company, Eiseman Magneto Corporation, Electric Auto-Lite Company, Emerol Manufacturing Company, Ensign Carburetor Company, Kingston Products Corporation, Klaxon Company, K-W Ignition Corporation, Leece-Neville Company, Mitchell Specialty Company, Monroe Auto Equipment Company, Moto-Meter Gauge and Equipment Corporation, Norma-Hoffman Bearings Corporation, Northeast Appliance Corporation, Owen-Dynete Corporation, Packard Electric Company, Robert Bosch Magneto Company, Inc., Sparks-Withington Company, Splitdorf Electrical Company, Tillotson Manufacturing Company, Trico Products Corporation, Tung-Sol Lamp Works, Inc., United Motors Service, USL Battery Corporation, Wagner Electric Company, Webster Electric Company, Westinghouse Electric & Manufacturing Company, Wico Electric Company, Winfield Carburetor Company. Five salesmen keep up their contact with the state dealers, which are to be found in every locality in Wisconsin.

Mr. Montz believes in featuring articles at certain seasons and it is to this fact he attributes the success of his business. At present the concern is featuring Bosch Motor Car Radio, which, according to his statement, is going over big. It is specializing in the installation of this product and in this connection is sending broadsides to local automobile owners.

Besides being the authorized jobbers for the state, the concern specializes in automotive electrical work for the Milwaukee trade and the necessity of enlarging its repair department has resulted from its venture in this field. Its new location was chosen with this in mind, for it is not only handy to the automobile row, but it is close enough to the downtown district so that the business man may leave his car there to be repaired while he is at work. In this connection the Wisconsin Magneto Company offers various special combination jobs, which are also featured in its broadsides. To appeal to the motorist to get his car in shape for the summer's driving it is making a special "444" combination inspection service for $3.50. This service includes the checking ignition timing, adjusting ignition contacts, regulating generator output, inspecting all wires, tightening all wire connections, inspecting lighting and ignition switch, testing battery gravity and voltage, cleaning and adjusting battery terminals, cleaning and adjusting spark plugs, testing ignition coil, cleaning commutator and starter, cleaning distributor cap, cleaning and adjusting horn and testing oil filter. In order to check up on the results of their broadsides, customers are requested to bring the notice with them to get the advantage of the special offer.

Due to the nationally-known character of the products it handles and the advertising of the manufacturers the Wisconsin Magneto Company does little newspaper advertising, except to supplement that of the national manufacturer. Direct mail advertising, as has been noted, is done extensively with excellent results.

SUPERIOR DISTRIBUTORS LEASES LARGER HOME

Newark, N. J., May 27.—Superior Distributors, Inc., of 38 Brandford Place, has leased the premises at 215 Central Ave., corner Lock Boulevard, this city. The building has a forty-foot front on Central Avenue and has a total area of 14,000 square footage all on one floor. Loading and delivery will be carried on in the rear yard, which has an outlet on Sussex Avenue. The building is of a modern two-story brick and concrete construction with a new front just installed and fitting the requirements of this business.

The change was necessitated by lack of space at the present address, also the badly congested condition of the streets in the Halsey Street and Branford Place area. This is the second large automotive supply house to move out to Central Avenue, which is now known as "Newark's Automobile Row."

The new store will contain many innovations, such as segregated departments, exhibits under glass, movable show window bulkheads and invisible price files. This company terms itself "The Automotive Supply House Complete," travels ten men and covers northern New Jersey. It expects to occupy its new premises about July 6. A. L. Futterman is manager.

PEP BOYS OPEN ANOTHER

Philadelphia, May 27.—The Pep Boys opened another unit in their long chain of automotive accessory and supply stores yesterday. The latest acquisition is at 6800-6802 Market St., at Kent Road, in the progressive, new 69th Street section. According to custom, special values in merchandise were offered at the shop opening. The house has just issued its 1930 catalogue.

Diesel Type Engines For Use in Automobiles

This paper on "Diesel Engines for Automobiles" was presented at the Tuesday Diesel engine session of the summer meeting of the Society of Automotive Engineers, French Lick Springs, Ind., by C. L. Cummins of the Cummins Engine Company, Columbus, O.

The application of a Diesel engine to an automobile has developed many interesting and unusual problems, as well as some very astonishing results in the transporting of weight. Most of us evidently thought that the status of the gasoline engine for automotive work was thoroughly established. One evidence of this was found when I attempted to obtain a license for a Diesel-powered car. There was no provision whatsoever for such a power plant and it required considerable time because of the supposedly fixed and well established rules to permit of this.

Another problem presented itself when application for insurance was made. The automobile department of one of the largest insurance companies, which first issued the policy later suddenly canceled it with the statement that they were unfamiliar with the hazards that the Diesel engine might develop in the car. It was only after waiving numerous details and policies that ordinary protection was obtained.

Up to date we have experimented with two types of cars, which have given us invaluable information as to what automotive requirements might be.

The first car was a seven-passenger sedan limousine, which weighed approximately 6,000 pounds, complete, ready for the road. This is the car which was used in our trip to New York and was driven approximately 6,000 miles. The fuel consumption varied from 25 to 35 miles per gallon, according to speed and number of delays in traffic. The car was geared 2½ to 1, and aside from being a little sluggish on the pickup from zero to 20 miles per hour, the performance was practically the same as with the standard equipment originally used in the car. The motor was four cylinder, 4½x6 inch bore and stroke, designed to operate normally at a maximum of 1,000 revolutions per minute. The standard governor equipment was left on the engine, although the revolutions were increased to about 1,200, which gave the car a top speed of 52 to 55 miles per hour. The standard transmission and clutch were used, and no changes from standard were made in the motor used in the first car. As the motor was primarily designed for marine service and as far as practical complied with the specifications of both Lloyd's and American Bureau of Shipping it was naturally heavier than the one removed from the car, the difference in weight being approximately 400 pounds. No difficulty whatsoever was experienced in the handling of the car because of its added weight, and although many hundreds of miles were driven on snow and ice-covered pavement, the car seemed to be perfectly stable.

The drive from Indianapolis to New York produced almost every conceivable traffic condition, ranging from the long straight stretches across Indiana and Ohio to the hilly, crooked roads of eastern Ohio and western Pennsylvania. The entire stretch of mountainous Pennsylvania was buried in snow and ice except in a few spots in the valleys. The temperature ranged from considerably below zero to about 70 degrees, which was encountered during the Automobile Show week in New York. No fan could be used, due to lack of space, and yet it was necessary, with the standard radiator, to cover up from one-half to two-thirds of the radiator. The water aemperature, which was taken at the hottest point, ran normally around 90 degrees and never exceeded 120 degrees in the hardest mountain pulls. The motor was sufficiently flexible to meet the traffic conditions found in New York, Philadelphia, Baltimore and other cities en route. The performance from the outside was perfectly normal, as no one, either the drivers or the traffic officers, gave us a second look. The exhaust at all times was better than the average of the gasoline cars which we were passing and not nearly as bad as a great many cars that were observed.

From the experience gained in the sedan, it was decided that the motor evidently had sufficient flexibility and power to develop fairly high speed, if a lighter model car were used, the gear ratio increased, etc. Consequently, we decided to install the same engine in a roadster, which cut the weight to about 4,500 pounds. The difference in the handling of the car was very noticeable, acceleration was better, and the performance, in general, was excellent. From some short test runs which were made we decided that a top speed of possibly seventy miles per hour might be obtained with this car, and as the American Automobile Association officials were to be in Daytona Beach with timing apparatus to take care of Kaye Don's attempt to break the record set up by Major Segrave, application for sanction was made and granted.

The car was driven from Columbus, Ind., to Chattanooga on the first day. The distance was 436 miles, and the average was forty-two miles per hour for this run. While in Chattanooga we decided to climb Lookout Mountain, and, with four passengers in the car, the climb was made in high gear, 2½ to 1 ratio, with the exception of two spots which were so rough that it was necessary to drop into second for a short distance.

The total distance to Daytona Beach was 1,060 miles, and two fillings of the fuel tank were required, using thirty-nine gallons of fuel. On arrival at Daytona Beach the top and windshield were removed from the car, and a 2 to 1 gear ratio was installed. No changes were made in the motor, and it was unnecessary to make any adjustments, in spite of the hard trip down.

After one practice run on the beach we made our first run for the record, and made an average both ways of slightly under eighty miles. A tire change was made, reducing the gear ratio slightly, which seemed to help a little, and on Thursday, March 20, a speed of 80.389 miles per hour was certified by the contest board of the American Automobile Association. This average covered a distance of five miles in both directions.

The beach was extremely rough, and, in fact, on the day the record was made, it was so bad that Mr. Don's speed for the day was only ninety-one miles.

The car has since made eighty-eight miles, at which speed the engine was turning approximately 2,200 r. p. m.

The car was driven back to Columbus in record time without changing the 2 to 1 gear ratio, and yet the mountainous section of Tennessee was traversed without the use of second gear. It has had several thousand miles since its return from Daytona Beach, mostly at high speed, without replacement of any parts or adjustments.

The object of this test was to show some concrete examples of performance with the engine, and the following general descrption will explain and illustrate the construction and principles used in the Cummins type of engine.

In order to simplify and more clearly to illustrate the function of the engine, I have divided the operation of the engine into three general stages, not in order of importance, but as they occur in sequence.

(a) The metering or delivery of fuel to injector.

(b) Preparation and injection of fuel charge.

(c) Turbulence and combustion.

In our earlier engines, we discovered that metering and injection of the fuel should not be combined, but should be completely separated and distinct one from the other. This permits the metering and delivery of the charge as the first stage under extremely low pressure, which makes possible the metering or measuring of the extremely minute quantities of fuel necessary for throttling or idling conditions in a small bore engine. By separating the metering and injection, both functions can be accomplished under more ideal conditions than with any system where they are combined. We found that with pressure of 3,000 to 5,000 pounds, which was necessary under the combined method to insure penetration and breaking up, the metering of the small quantities could not be accomplished satisfactorily. It is easily understandable that with 3,000 pounds pressure, the mechanism involved must be extremely well made, and the adjustments must be perfect. The first means high cost of the parts involved and the second calls for skilled operators.

In the multiple cylinder engine, equal distribution of fuel, under all conditions of speed and load, becomes a serious problem when individual metering pumps or needle valves must be used, as found in our earlier models.

The author brought out by the use of slides the details of various types of construction.

NEW DUESENBERG DEALER NAMED FOR BUFFALO

Indianapolis, Ind., May 27.—The Robert Donner Company, 1244 Main St., Buffalo, N. Y., has been appointed Duesenberg dealer for that city, H. T. Ames, vice-president of Duesenberg, announces.

Mr. Donner, president of the new company, is widely known in the business circles of Buffalo. Sales and service departments will both be at the Main Street address.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

85%

of all tubes made in this country are

FACTORY EQUIPPED

with

SCHRADER VALVES

YEARS ago Schrader pioneered in the manufacture of pneumatic valves.

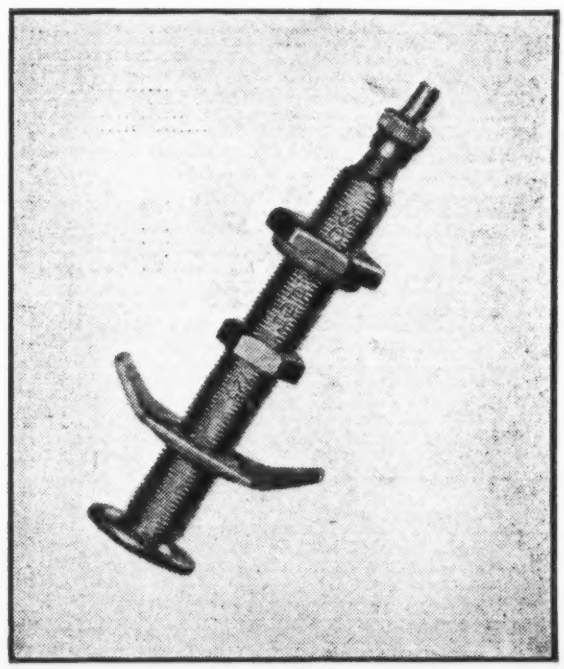
Today, 85 tubes out of every 100 manufactured in the United States and Canada are equipped at the factory with Schrader Valves.

Why? Because countless tests, over many years, have proved that Schrader Valves inflate faster, hold air better and last longer than any other valve.

Tire makers know these facts. And the buying public looks for the name Schrader on original equipment as well as on replacement valve parts.

Schrader Products Give Satisfaction

Because of their high reputation, Schrader Valves and Valve Parts find a ready acceptance with both public and trade. Motorists everywhere have utmost assurance that Schrader Valves will hold air in the tires they ride on. Also, the trade finds that Schrader Products mean more satisfaction and fewer tire complaints. A. Schrader's Son, Inc., Brooklyn . . . Chicago . . . Toronto . . . London.



Gruelling tests have proved the superiority of this valve ever since pneumatic tires were first used.

Be sure it's a Schrader—Look for the name.

Schrader

Makers of Pneumatic Valves Since 1844

TIRE VALVES TIRE GAUGES

Financial News: Range of Automotive Stocks

Continental Motors Reports Gain In Industrial Engine Business

DETROIT, May 27.—The Continental Motor Corporation's forthcoming report for the six months ended April 30, the first half of its fiscal year, probably will show a loss. While the first six months' "are always the hardest" in the company's fiscal year the last two months of 1929 and the first four months of 1930 have been unusually lean, the direst result of the slowing down of the automobile trade generally.

Continental has satisfactory contracts for deliveries of automobile, truck and bus motors, but schedules have been reduced frequently, sometimes even after they have been released.

The statement also will be affected adversely by large items of expense attendant upon the development of the company's aircraft engine through its subsidiary, Continental Aircraft Engine Company. The engine is giving a good account of itself and substantial production schedules are anticipated when the aircraft business in general picks up.

Another fact that may be expected to be reflected in the company's semi-annual statement is the announced intention of the company's new management to "clean house" by writing off all items covering obsolete and unproductive machines, tools and materials accumulated during recent years.

To what extent action along this line will be taken has not been stated by the officials of the company, but apparently the management has determined to have the company's financial set-up reflect only live assets at current prices and thus clear the way for a better showing of earnings in the future.

The brightest spot in the Continental picture is the industrial engine department. This part of the business is reported to be growing rapidly. Prices are satisfactory, and the "spreadable" element is not nearly so marked as in the case of the automotive-engine line.

It is understood that the aggregate of actual orders in all departments now on hand amount to over $8,000,000.

With new management and a "clean house" earnings of Continental Motors should respond to any improvement in general business.

OTHER FINANCIAL NEWS

GENERAL MOTORS

At the special meeting of the stockholders of the General Motors Corporation, the proposal to create a new class of preferred stock of no-par value, consisting of 6,000,000 shares, was approved. A total of 1,875,366 shares of the new $5 series preferred will be offered in exchange for outstanding preferred stocks.

AMERICAN BOSCH

The $155,526 loss of the American Bosch Magneto Corporation for the first quarter, which compared with a profit of $22,192 after taxes for like period last year, was in line with expectations and resulted entirely from the adverse condition of the radio industry generally. Forced wholesale liquidation has been maintained throughout the winter and even the biggest companies suffered severely from the purging process.

UNIVERSAL CREDIT OPENS OFFICE IN LITTLE ROCK

Little Rock, Ark., May 27.—The Memphis branch of the Universal Credit Company has established a branch office in this city. It is on the fourth floor of the Donaghey Building, 7th and Main. P. F. Crowley is in charge with forty employees, twenty from Little Rock and twenty former Arkansas men transferred from Memphis.

The Universal Credit Company is affiliated with the automobile business and provides plans for time payments on certain cars, and still affords the customer the lowest cost. The Memphis office was opened in May, 1929. It has made wonderful progress.

LISTS OF FLEET OWNERS

1,000 OWNING **100** OR MORE
17,000 OWNING **10** OR MORE
3,300 BUS FLEET OPERATORS

Showing in almost every case the names of the men who control or influence the automotive purchasing policies. Separate lists for larger cities.

Fleet Owner List Co., 1817 B'way, N. Y.

RUBBER PRICES

RUBBER EXCHANGE OF NEW YORK
No. 1 Standard Contract

	High	Low	Closing May 26	Closing May 24
May	....	....	*14.08	14.30
June	....	....	*14.13	14.35
July	14.33	14.32	14.18@14.25	14.40
August	....	....	*14.34	14.57
September	14.55	14.55	‡14.50	14.75
October	....	....	*14.65	14.89
November	....	....	*14.80	15.02
December	....	....	*14.95	15.15
1931—				
January	....	....	‡15.10	15.27
February	....	....	*15.17	15.38
March	....	....	‡15.25	15.50
April	....	....	*15.37	15.62
Spot	....	....	*14.10	14.20
Sales (tons)			70	50

Transferable notices so far, 3. Market closed dull.

*Nominal. ‡Bid.

	High	Low	Closing May 26	Closing May 24
	"A" Contract			
May	14.10	14.10	*14.10	14.10
June	14.00	13.90	*13.90	14.10
July	14.20	14.00	‡14.00	14.20
August	....	....	*14.20	14.30
September	14.50	14.30	‡14.30	14.50
October	14.70	14.60	*14.50	14.70
November	....	....	*14.60	14.80
December	14.80	14.80	14.70@14.80	14.90
1931—				
January	....	....	*14.80	15.00
February	....	....	*14.90	15.10
March	15.10	15.10	15.00@15.10	15.20
April	....	....	*15.10	15.30
Sales (tons)			295	77‡

Transferable notices, 155; so far, 1,05‡ Market closed dull.

*Nominal. ‡Trading.

Outside Closing Prices

(Per pound, delivered New York.)

	Bid	Asked
Plantation—		
Ribbed Smoked Sheets—		
Spot	14⅛	14¼
June	14⅛	14¼
July	14⅛	14¼
July-September	14⅜	14⅝
October-December	14½	14¾
January-March	15	15¼
Spot—		
First latex, thin	14⅜	14½
Thin pale latex	14⅝	14¾
Clean thin brown, No. 2	13¼	13½
*Specky crepe	12⅞	13⅛
Rolled brown crepe	9⅜	9⅝
No. 2 amber	13½	13⅞
*No. 3 amber	13⅜	13⅝
No. 4 amber	13	13⅜
*Paras—		
*Upriver, fine, spot	15¼	15½
do coarse	7½	7¾
*Accra, fine, spot	15¾	16
*Caucho Ball—Upper	7¼	7½
Centrals—		
*Esmeralda	8¼	..
*Central scrap	8¼	..
Cauyule, washed and dried	..	15
†Balata—		
*Block Ciudad	43	44
*Surinam, sheet	56	57
*Manaos block	44	45
Peruvian block	15½	16

Scrap Rubber

(Dealers' buying prices, f. o. b., New York)

Inner tubes, mixed cwt.	$2.90 @ 3.00
Inner tubes, red, cwt.	3.00 @ 3.42½
Tires, standard, mixed ton	10.00 @11.00
Inner tubes, No. 1, cwt.	6.12½@ 6.25
Inner tubes, No. 2, cwt.	2.87½@ 3.00
Mixed hose, soft, cwt.	.40 @ .45
Hose, air brake, ton	10.00 @11.00

*Nominal. †Sold on sample only.

GASOLINE PRICES

	Net tank wagon	Road tax	Total tank wagon	Service station
Greater N. Y. C.	14.3	2	16.3	18.3
Syracuse	13.8	2	15.8	17.8
Rochester	15.0	2	17.0	18.0
Buffalo	14.8	2	16.8	18.8
Albany	15.6	2	17.6	19.6
Burlington	16.3	4	20.3	22.3
Manchester, N.H.	15.4	4	18.4	21.4
Augusta, Me.	14.8	4	18.8	21.8
Boston, Mass.	14.5	2	16.5	18.5
Prices in Other Markets				
Atlantic City	14.5	2	16.5	18.5
Newark	13.5	2	15.5	17.5
Annapolis	14.0	4	18.0	20.0
Baltimore	13.2	4	17.2	19.2
Cumberland	15.0	4	19.0	21.0
Washington	13.7	2	15.7	17.7
Danville	14.8	5	19.8	21.8
Norfolk	13.3	5	18.3	20.3
Petersburg	14.3	5	19.3	21.3
Richmond	13.7	5	18.7	20.7
Roanoke	15.0	5	20.0	21.0
Charleston	14.5	4	18.5	20.5
Keyser	15.1	4	19.1	21.1
Parkersburg	13.2	4	17.2	19.2
Wheeling	14.4	4	18.4	20.4
Charlotte	15.3	5	20.3	22.3
Hickory	15.8	5	20.8	22.8
Mt. Airy	15.5	5	20.5	22.5
Salisbury	15.7	5	20.7	22.7
Charleston	13.3	6	19.3	21.3
Columbia	15.2	6	21.2	23.2

Two cents per gallon discount off gasoline tank wagon price to dealers and commercial buyers.

Pennsylvania

	Net tank wagon	Service station
Pittsburgh	15	21
Philadelphia	15	21
Allentown	15	21
Erie	15	19
Scranton	15	21

NEW YORK CURB EXCHANGE

Sales		High	Low	Close	Net Chge
11500	Cities Service	35⅛	34⅝	35	— ⅛
400	do pf	93¼	92⅞	93¼	— ⅛
	Cont Dia Fibre		No sales		
1100	Cord Corp	10⅝	10¼	10½	— ⅛
500	Doehler D C	16¼	16	16	...
3100	Durant Motor	4	3¾	4	...
	Fageol Motor		No sales		
	Fedders		No sales		
	Federal Mogul		No sales		
	Federal Screw		No sales		
400	Fiat	2¼	2¼	2¼	— ⅛
1600	Ford Canada	36⅝	36	36¼	+ ¼
400	Ford France	12⅝	12⅝	12⅝	+ ⅛
1500	Ford Ltd	18⅛	18	18	— ½
	Franklin Mfg		No sales		
	Gen T & Rub		No sales		
	Gr'nfield T & D		No sales		
	Hall Lamp		No sales		
	Henney		No sales		
	Hood Rubber		No sales		
	India Tire		No sales		
	Isotta Fras		No sales		
	Jueger		No sales		
	Lakey		No sales		
	McQuay Norris		No sales		
100	Nat Rub Mach	13	13	13	— ½
1000	Paramount Cab	6⅜	5¼	5¾	— ¼
	Perfect Circle		No sales		
	Pines Winter		No sales		
	Pitt Pi Glass		No sales		
	Rolls Royce Am		No sales		
	Ross Gear		No sales		
	Safe T Stat		No sales		
200	Seiberling	7¾	7½	7½	— ⅛
20	Smith A O	215	215	215	+ 4¼
	Sparks With		No sales		
500	Stutz Motor	2⅞	2⅝	2⅝	— ⅛
	Thermoid Co		No sales		
300	Triplex	10¼	10⅛	10⅛	+ ⅛
100	Tung Sol	22	22	22	...
	U S Asbestos		No sales		
500	Watson, J W	3½	3	3	— ⅝
100	Wayne Pump	13⅜	13⅜	13⅜	— ⅛

NEW YORK OVER-THE-COUNTER

Div.		Bid.	Asked.
6	Am Hard Rubber	65	75
8	Dixon J Cruc	165	175
3.50	Doehler D C	37	41
7	do pf	89	..
..	Eisemann Magn	22	..
..	Rolls-Royce America	..	10
..	do pf	11	15
..	Splitdorf Beth E	3¼	4

CHICAGO STOCK EXCHANGE

Sales.		High.	Low.	Last.
500	Allied Mot Ind	14⅛	14	14⅛
1000	Auburn Auto	171½	165	171½
5400	Bendix Aviat	44	42⅜	43
4150	Borg-Warner	38⅛	37¼	37¼
50	Chain Belt	43	43	43
5400	Cord Corp	10⅝	10¼	10½
1950	Houd-Hershey A	25	23⅞	25
1650	do B	21¼	20	20¾
10	McC Rad A	33½	33½	33½
1100	Modine	65¼	64	64¼
10	Nat Bat	25	25	25
200	Noblitt Spark	51¾	51½	51¾
150	Perfect Circle	38	37½	38
100	Pines Winterfr	35	34	35
10	Wauk Motor	110	110	110
100	Wayne Pump pf	34	34	34

CLEVELAND STOCK EXCHANGE

Sales.		High.	Low.	Last.
40	Apex E	14½	14½	14½
119	Firestone pf	80¼	80¼	80¼
300	Goodrich	41½	41½	41½
40	Indian Tr	20	20	20
15	Mohawk Rubber	14⅛	14⅛	14⅛
10	Ohio Brs B	72½	72½	72½
10	Packard El	18⅞	18⅞	18⅞
175	Seiberl Rubber	7¾	7¾	7¾
10	Vichek Tl	17½	17½	17½

DETROIT STOCK EXCHANGE

Sales.		High.	Low.	Last.
49	Bwr Rol b	16⅜	16¼	16⅜
700	Detroit El	9¾	9½	9½
1435	Excello	16	15⅞	16
145	Fed Screw	36	36	36
163	Ford Mot Can	36½	36½	36½
220	Fed Motor Truck	10¼	10⅛	10⅛
515	Grd R M C	8½	8⅜	8⅜
137	Gen Mo	52⅝	52⅝	52⅝
495	Hall Lamp	13⅛	13	13⅛
236	Jack Moft	14¾	14¼	14¾
7350	Pgh Forge	25	22	24⅛
102	Parker R P	112	112	112
245	Packard	17⅝	17⅝	17⅝

SCRAP METAL

	Buying	Selling
Aluminum—		
Cast scrap	11½—12	13 —13½
Sheet scrap	12 —12½	13¼—13¾
Clippings	15 —15¼	16½—17¼
Copper—		
Heavy mach. comp.	7 — 7⅛	9 — 9¼
Heavy and wire	8¾— 9¼	9¾—10½
Light and bottom	7¾— 8¼	8¾— 9
Auto radiators	5 — 5¼	5½— 5¾
Heavy cut and cruc.	9 — 9½	10¾—11
Brass, heavy	5 — 5¼	6 — 6½
Brass, light	4 — 4¼	5 — 5½
No. 1 cl. brass turn.	5¼— 5½	6 — 6¼
No. 1 comp, turn	7 — 7¼	9 — 9¼
Lead—		
Tea lead	2⅛— 2¼	3 — 3¼
Lead, heavy	3¾— 4½	4⅞— 5⅛
Stereotype	5½— 5¾	6⅜— 6⅝
Electrotype	3⅞— 4	4⅝— 6
Battery lead	1⅝— 1⅞	2⅜— 2½
Mixed babbitt	4 — 4½	5⅜— 5⅞
Zinc—		
Zinc scrap	3⅛— 3⅜	3¾— 3⅞
New zinc cuttings	4 — 4½	5⅛— 5¼
Tin—		
Block tin, scrap	27⅞—28½	29 —30½
Tinfoil, pure	17⅛—18¾	19⅜—21½
Siphon tops	15½—16	18¼—19

LUBRICATING OILS

All prices cooperage f. o. b., New York.
(1-inch immersion test.)

Filtered D, 600	—38½
Filtered E, 600	—33½
Unfiltered, 600 S. R	—27½
Unfiltered, 650 S. R	—35
600 Flash, S. R	—36½
630 Flash	—42½
Bright stock	—42½

RED ENGINE OILS—
(Viscosity at 100.)

300	No. 6½ color	—21
250	No. 6 color	—17½
200	No. 6 color	—16½

PALE ENGINE OILS—
(Viscosity at 100.)

230	No. 3¾ color	—23
180	No. 3½ color	—19
100	No. 2¼ color	—15½

MOTOR OILS—
(Viscosity at 100.)

600	No. 7 color	—30
500	No. 7 color	—26½
400	No. 6½ color	—23
300	No. 6 color	—21
200	No. 6 color	—20½

MONDAY, MAY 26

NEW YORK STOCK EXCHANGE

Previous 1930 High	Previous 1930 Low	Div.		Sales	High	Low	Close	Net Change
23¼	11½	....	Advance Rumely		No sales today			
41¼	22	....	do pf		No sales today			
150⅜	118	3	Air Reduction	2,700	145¾	144	145	+ 1½
2½	1⅜	....	Ajax Rubber	600	1⅝	1½	1½	— ⅜
68	49¼	3	Allis Chalmers	5,300	64½	63	63	— ¼
55½	34	....	Am. Bosch Magneto		No sales today			
69⅞	54	3	Amer. Chain		No sales today			
101	75⅞	7	do pf		No sales today			
4	2	....	Am.-La France	200	2⅝	2⅝	2⅝	....
263¾	150	*4	Auburn	2,100	171¾	165¾	165¾	....
57⅜	32⅞	2	Bendix Aviation	7,700	44¼	42½	43¼	+ ¾
69	47⅞	3	Bohn Aluminum	200	56	55⅞	56	+ 1⅛
50½	32⅞	3	Borg-Warner	1,300	38⅛	37¼	37½	— ¼
24⅛	13½	....	Briggs Mfg. Co.	24,200	24⅛	23	23¾	— ⅜
35½	21¼	2	Briggs & Stratton		No sales today			
22¼	13	....	Brockway Motor	100	21⅜	21¾	21⅜	....
16⅝	9⅜	1	E. G. Budd Mfg.	2,900	12¼	11⅞	12	— ⅛
14⅝	8⅛	1	Budd Wheel	2,000	14	14	14	....
74	29⅞	1.60	Bullard	500	44½	39⅞	41½	+ 2½
79¾	54	*3	Caterpillar Tractor	200	75⅞	75¼	75¼	+ ⅛
67⅞	36	4.20	Checker Cab	2,900	46¼	45¼	45½	— ⅛
37	17½	....	Chicago Pneu. Tool	1,500	22⅞	21	21⅜	+ ⅜
32	26½	3	Chicago Yellow Cab		No sales today			
43	30½	3	Chrysler Corp.	34,300	37⅞	36¾	37½	+ ½
44½	33	3	Clark Equipment	100	38	38	38	....
40¾	23⅜	2	Commercial Credit	1,800	31¾	30⅜	30⅞	+ ⅝
87	82½	6	do pf		No sales today			
55	36⅛	†1.60	Comm'l Invest. Trust	500	42¾	41¾	42½	+ ¾
8¼	4⅜	....	Continental Motors	1,500	5½	5¼	5½	+ ¼
90½	64	*3.50	Cutler-Hammer	500	75	75	75	+ 1
145⅓	112⅛	*4	Du Pont	4,900	134	131	131	— 2
37¼	24⅛	3	Eaton Axle & Spring	2,900	29¾	28¾	29	+ ½
114⅛	81	6	Electric Auto-Lite	6,800	93¾	90¾	90¾	— 1¾
79¼	66	5	Electric Stor. Battery	1,500	71⅛	70⅝	71⅛	+ ⅝
7⅝	3½	....	Emerson Brant		No sales today			
30¾	13¼	2.50	Evans Auto Load		No sales today			
12¼	7¾	.80	Federal Motors	100	10	10	10	— ⅛
10½	7	.64	Fifth Avenue Bus		No sales today			
33⅛	21⅝	1.60	Firestone T. & R.	700	24¾	24⅛	24⅜	+ ⅜
87⅞	79⅝	6	do pf.	300	80	80	80	+ ⅛
5½	3	....	Fisk Rubber	300	3⅞	3¾	3¾	....
21	13	....	do 1st pf.	80	14¼	14¼	14¼	+ ¼
11¾	5⅝	....	Gabriel Company	100	8	8	8	....
7¾	3½	....	Gardner Motor	400	4¼	4⅛	4⅛	— ⅛
95⅜	60⅛	1.60	General Electric	43,300	84	82	82¼	— ⅝
54¼	37½	*3	General Motors	103,600	52⅞	51½	51⅝	— ⅜
131½	117½	7	do pf.	1,900	129	128⅞	129	....
38	23½	2	Glidden Co.	1,600	24⅞	24¼	24⅞	+ ⅝
105¼	95	7	do pf.	30	98¼	98	98¼	— ½
53½	36	4	Goodrich	2,100	42⅛	40⅞	40⅞	— ⅝
104½	95⅝	7	do pf.		No sales today			
90⅞	62	5	Goodyear T. & R.	3,800	85⅜	83½	84½	+ 1½
102¼	90	7	do pf.	600	100½	100	100½	+ ½
13⅜	8⅛	....	Graham-Paige Motor	1,100	9	9	9	....
17¾	6¼	....	Hayes Body	2,300	11⅛	10⅜	11⅛	— ⅜
31	22	1.80	Hercules Motor	2,900	27	27	27	....
29	17½	2	Houdaille-Hershey B	3,700	21⅜	20¼	20¼	— ⅜
62⅞	41⅛	5	Hudson Motor Car	1,600	45⅜	44	44¼	— 1
26⅝	17⅛	2	Hupp Motor Car	1,300	19	18¾	18¾	— ⅜
17	5	....	Indian Motocycle	100	8	8	8	....
115¾	78¾	2.50	Interna. Harvester	13,400	102	97¾	97¾	— 4⅛
144½	140½	7	do pf.	100	143¾	143¾	143¾	....
148⅜	98	3	Johns-Manville	12,600	112¼	108¾	110	+ 3
5½	2	....	Jordan Motor Car	500	3	2⅞	2⅞	....
6⅛	3¼	....	Kelly-Springfield	300	4¼	4¼	4¼	— ¼
42	20⅛	....	do 8s pf.	30	30	30	30	+ ⅞
38⅞	22⅛	2	Kelsey-Hayes Wheel	3,900	35⅝	34⅝	35¼	+ 1¼
11	6¼	....	Lee Rubber & Tire		No sales today			
45⅜	39	2.60	Link Belt	100	42¼	42¼	42¼	+ 2¼
44⅞	28	2	Ludlum Steel	5,200	36⅞	35¼	35¼	— ¾
88½	65⅛	6	Mack Trucks	1,500	74⅝	73	74	+ ⅛
55	39⅞	4.75	Marlin Rockwell		No sales today			
30⅞	17¼	*2	Marmon	600	21⅛	21	21	+ ¼
5⅝	3	....	Martin Parry		No sales today			
23¾	15⅛	2	Mengel	100	16½	16½	16½	....
77	53	2.50	Michigan Steel	300	75	74	74	— 1½
53	32⅛	3	Midland Steel	500	37¼	37	37⅛	+ ⅝
16½	3⅜	....	Moon Motors	500	11⅛	10½	11⅛	+ ⅛
11⅝	4½	....	Moto Meter G. & E.	1,900	6¼	6	6	....
81	50	2	Motor Products	500	60	58	60	+ 2
34	26½	3	Motor Wheel Corp.	300	28¾	28⅜	28¾	+ ½
20¾	12⅞	....	Mullins Mfg.	100	16⅜	16⅜	16⅜	— ⅝
25¼	18	‡2	Murray Corp.	14,200	23½	22⅞	23⅜	+ ⅜
58½	38½	6	Nash Motors	2,300	42¼	41⅜	41⅜	+ 1¼
26¼	16⅞	1.50	National Acme	400	18¾	18¾	18¾	....
4	⅞	....	Norwalk T. & R.		No sales today			
8⅜	2¾	....	Omnibus Corp.	100	6	6	6	— ⅛
38⅞	29⅜	2.50	Otis Steel	100	30¾	30¾	30⅜	— ¾
23⅜	15⅜	1	Packard Motor Car	12,400	17⅞	17¼	17¼	— ⅛
26⅛	12⅛	1.50	Parmalee Transport	500	15⅞	15⅜	15⅝	+ ⅛
14	16⅛	....	Peerless Motor Car	1,100	8⅞	8⅛	8⅛	— ⅞
33	21½	....	Pierce-Arrow	100	27	27	27	— ½
82	69½	6	do pf.		No sales today			
27¼	21⅛	1.50	Pure Oil	3,300	23¼	23	23	....
58⅞	33	2.60	Raybestos Manhattan	2,500	40½	39⅝	40⅜	— ⅛
14⅞	10⅛	.80	Reo Motors	700	11⅜	11⅛	11¼	+ ⅛
7½	4	....	Reynolds Spring	100	4⅝	4⅝	4⅝	+ ⅜
14¼	9¾	1.20	Seagrave		No sales today			
25½	20⅛	1.40	Shell Union Oil	3,500	21	20⅜	20⅞	....
32	21⅝	2	Sinclair Oil	8,500	28¼	28	28	....
30½	13⅛	1	Sparks-Withington	2,000	27	26½	27	+ ½
36½	21½	....	Spicer Mfg. Co.	100	23⅛	23⅛	23⅛	— ¾
45⅛	39¼	3	do pf.		No sales today			
75	55½	2.50	Stand. Oil of Cal.	4,500	70⅝	70	70	— ½
84⅞	58	*1	Stand. Oil of N. J.	45,200	79⅜	77⅝	78⅝	+ 1½
40⅜	31¼	1.60	Stand. Oil of N. Y.	5,900	36⅝	36	36½	+ ½
47	25⅜	1	Stewart-Warner Spd.	5,800	29½	27⅝	29	+ 1⅛
47¼	35⅛	4	Studebaker Co.	1,000	37⅜	37	37	....
125	116	7	do pf.		No sales today			
39⅜	30	2.40	Thompson Products	100	33	33	33	+ ⅛
21¼	14½	.80	Timken Detroit Axle		No sales today			
89¼	69⅝	3	Timken Roller Bear	2,300	74¼	73¼	74	+ 1
41¾	30⅝	2.50	Trico		No sales today			
139⅜	84½	*6	U. S. Ind. Alcohol	1,400	92½	91	92¼	....
35	21⅛	....	U. S. Rubber	2,500	30½	29¾	29¾	— ⅛
63⅞	47	....	do 1st pf.	900	52½	51½	51½	— ¾
27	16⅝	1	Warner Quinlan	500	18½	18⅛	18⅛	— ¼
52	40⅝	2	Westinghouse A. B.	800	44	43¼	43¼	— ¾
43	31	2	White Motors	800	38⅛	37	37	+ ½
34¼	27	2.50	Wilcox Rich A		No sales today			
27¾	18⅛	2	do B	600	24	23⅛	24	+ 1¾
11	7⅜	....	Willys-Overland	700	7⅜	7⅝	7⅝	— ⅛
85	67¼	7	do pf.		No sales today			
77	46	5	Yale & Towne		No sales today			
32¾	12⅜	....	Yellow Tr. & C.	11,900	29	27⅞	28¼	+ ¼
105	72	....	do pf.		No sales today			
47	36½	3	Young (L. A.) S. & W.		No sales today			

*And extra. †And 6 per cent. in stock. ‡And stock.

Effect of Low-Pressure Tires on Axle Design

(Continued from page 10)

worked out to stay inside of 90 inches and still smaller tires are required to stay inside of 84-inch overall.

The front axle has had its share of problems introduced by the low-pressure tire. These tires because of their much greater carcass dimensions require more space in the extreme turn position in order to clear the frame, drag link, etc. That means the front track must be greatly increased and we promptly run into our old enemy the 96-inch overall.

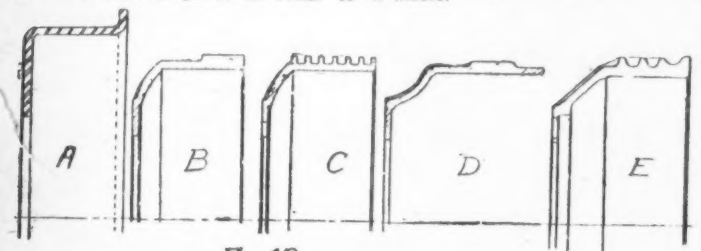


Fig 12

Due to the necessity of holding the distance from center of tire contact to axis of king pin within limits, it is necessary to incline the king pin outwardly at the bottom and nest the whole structure inside the tire, as shown by Fig. (10).

Due to the much greater area of contact which the low-pressure tire makes with the ground, it has proved very sensitive to errors in steering geometry, which did not show up with the high pressure tires. It has become vitally necessary to have true rolling action, that is, the tires must turn about an axis which, projected, goes through the center about

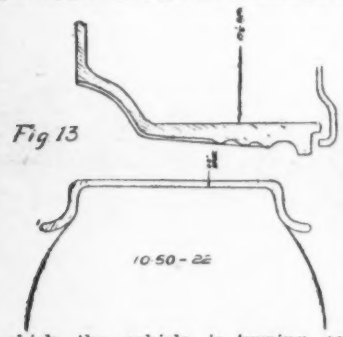


Fig 13

which the vehicle is turning, as shown in Fig. 16. If this condition is not achieved, undue wear occurs. To achieve this is not easy, because the cross tube balls would have to be positioned inside the tires. The last bit of end clearance was achieved by the tire rod end shown in Fig. 9D. This permits the ball to come still closer to the tire, but still the correct geometry cannot be achieved, so the only possibility is to pull the king pin in away from the tire. This in turn cuts down the turning angle and, of course, increases the overhang on the spindle, increasing the stress and load on the knuckle structure. This effect tends to cancel the benefit of the low pressure tire, in so far as its low impact factor would save the axle structure. The low pressure tire advantages outweigh its problems, so it is here to stay. There is going to be a change in the front end appearance of the heavy vehicles because of the necessary increase in fender widths to cover the increased size of tires and greater tracks.

The above brings out the fact that much greater co-operation is going to be necessary between all of the engineers responsible for the development of tires, brakes, axles and the vehicle as a whole, if development is to go forward toward the ideal machine without burdening the industry with excessive costs, due to sudden innovations without considering the vehicle as a whole.

The time has also come to do away with arbitrary laws fixing the characteristics of motor vehicles and leave the determination of what may be operated over a given road in the hands of engineers, employed by the states. These engineers could be guided by a general code which would meet the varying geographical conditions and road limitations. Such a code could be prepared by automotive engineers working with the Bureau of Standards and operating through the departments and commissions provided by the United States for this purpose.

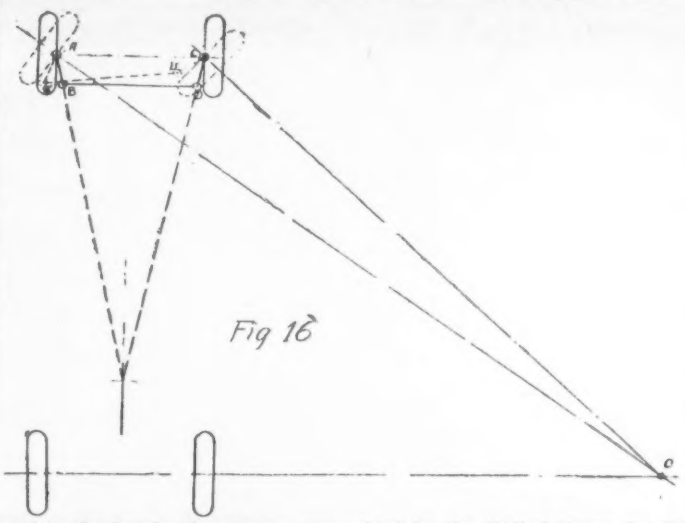


Fig 16

P. VAN CLEEF TO ATTEND RUBBER MEETING ABROAD

Chicago, Ill., May 27.—Paul Van Cleef of Van Cleef Brothers here, has accepted an invitation to attend a meeting of rubber chemists to be held at Frankfort, Germany, during the week of June 15.

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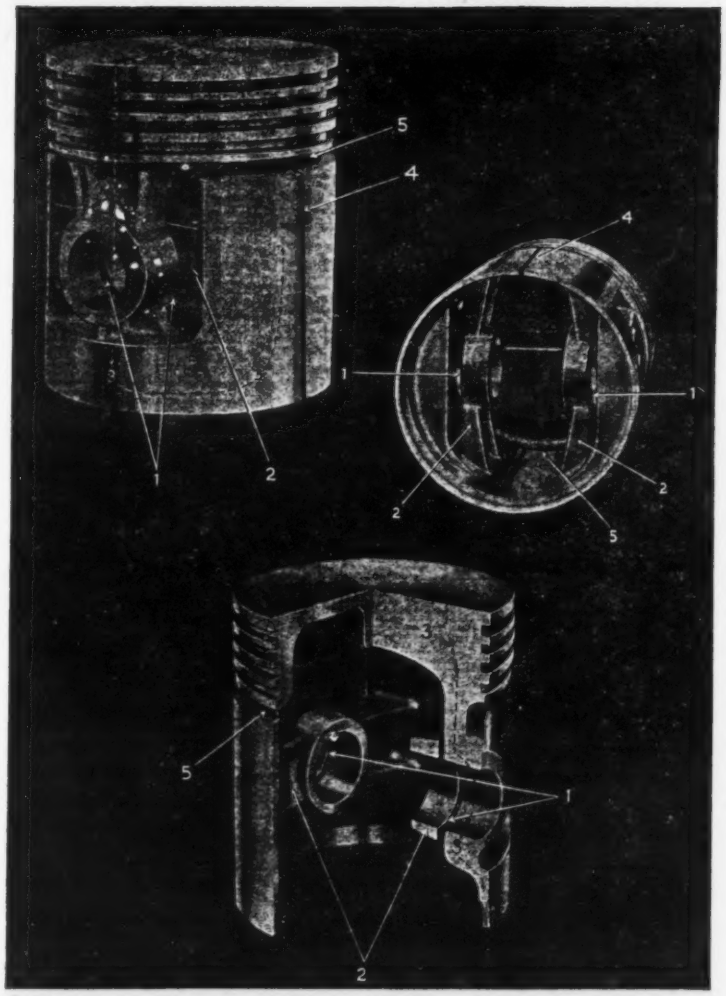

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Figure 2 indicates the transverse all-aluminum strut which, with the thrust faces, functions independently from the outer piston-pin bosses.

Figure 3 shows the direction of the heat flow. The heat flow is diverted from the thrust faces! Wall pressure and friction are eliminated. The thrust faces show contact with the entire cylinder wall. The "four-point" contact is banished. Initial and operating frictions are reduced. Oil and fuel economy and general engine efficiency are materially increased!

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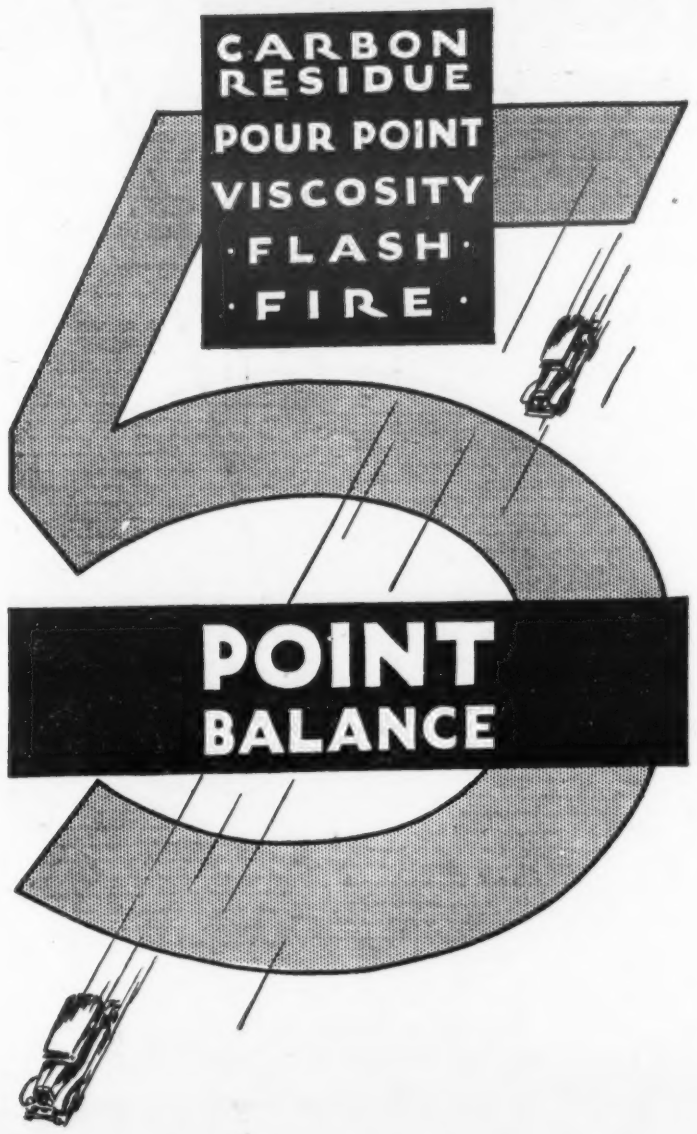

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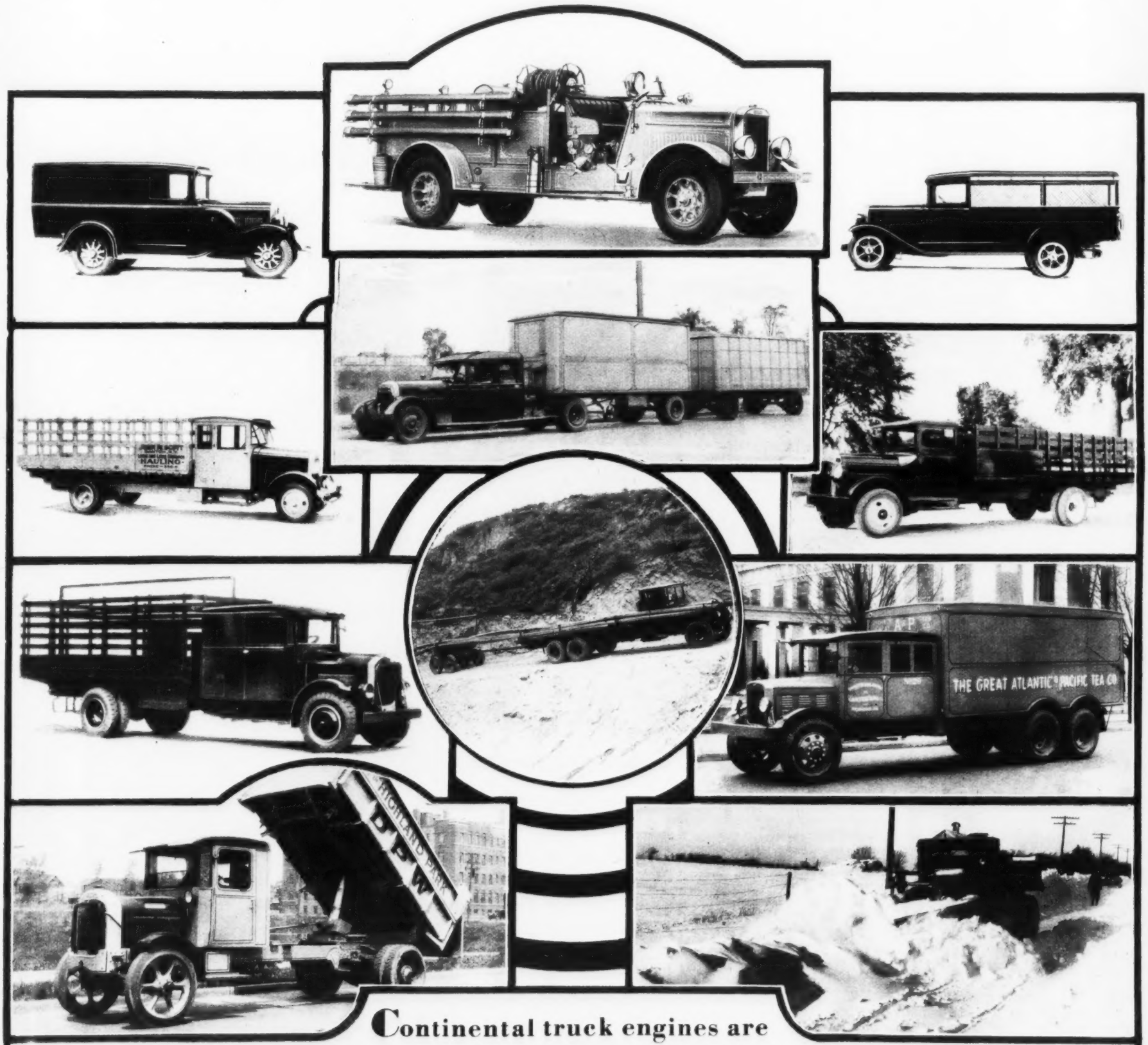

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